OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 9, 1973 Volume 915 Number 2

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PATENT OFFICE NOTICES

Patent Office

Organization and Functions

This order, effective August 1, 1973, amends the material appearing at 38 FR 1068 of January 8, 1973.

Department Organization Order 30–3B, dated December 15, 1972 is hereby amended as follows:

1. SEC. 7. *Offices reporting to the assistant commissioner for legal affairs.*

a. Paragraph .04 is amended to read:

.04 The *Office of Legislation and International Affairs* shall make studies and advise the Commissioner on policy and action concerning matters which may require legislation and on international patent and trademark matters; develop and direct the implementation of related programs; maintain liaison with the Office of the Secretary, the Department of State, and appropriate congressional committees; and conduct negotiations in technical patent and trademark matters in establishing or implementing international agreements.

b. Paragraph .05 is deleted.

2. The organization chart of December 15, 1972 is superseded by the organization chart attached to this amendment. Copy of the Organization Chart is attached to the original of this document on file in the Office of the Federal Register.

Effective date: August 1, 1973.

HENRY B TURNER.
Assistant Secretary for Administration.

[FR Doc. 73–19292; Filed 9–11–73; 8:45 am]

Numerical Collection of U.S. Patents in Microform for Public Search Room

Effective immediately, the Patent Office will implement a program to make available for use, in the Public Search Room, a complete numerical collection of printed U.S. Patents on 16 mm negative microfilm.

The program will require approximately six months for completion. An adequate number of reader-printers will be installed. The present numerical paper collection (bound volumes) will be removed from the mezzanine area when microfilm for the same patent numbers is available.

RENE D. TEGTMEYER,
Acting Commissioner of Patents.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,740,027, Budd, Stockhouse, and Slough, RADIO AND TELEVISION RECEIVER COMPONENT ADAPTED ESPECIALLY FOR USE WITH PRINTED WIRING; **3,375,478,** Van Benthuysen and Barden, ELECTRICAL CONTROL AND METHOD OF MAKING THE SAME; **3,518,604,** Beaver and Van Benthuysen, ELECTRICAL COMPONENT; **3,670,285,** J. A. English, VARIABLE RESISTANCE CONTROL WITH END COLLECTOR, **filed** Aug. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1891, *CTS Corporation* v. *Piher Int'l Corp.*

2,781,825, A. Lorenz, ARTICLE OF REPOSE FOR SUPPORTING THE BODY OF A PERSON; **2,918,109,** F. F. Schliephacke, ADJUSTABLE RECLINING CHAIR; **3,142,510,** P. S. Fletcher, LEG-REST ACTUATING MEANS FOR MULTIPLE POSITION RECLINING CHAIR; **3,169,035,** same, LEG-REST CONTROL ARRANGEMENT FOR RECLINING CHAIRS; **3,394,965,** same, SEQUENCING ARRANGEMENT FOR RECLINING CHAIR OF THE MULTIPLE MOVEMENT TYPE, **filed** Oct. 27, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2721, *Peter S. Fletcher* v. *Lear Siegler Inc., Dumas Brothers Mfg. Co.; Burris Industries, Inc. and Collins Mfg. Co. Inc.* Suit dismissed as to Dumas Bros., Burris Industries and Collins Mfg. and consent judgment as to Lear Siegler. Plaintiff is possessed of the entire right in Letters Patent Nos. 2,781,-825, 2,918,109, 3,142,510, 3,169,035, and 3,394,965 which are valid, Feb. 12, 1973.

2,895,950, V. K. Krieble, COMPOSITIONS CONTAINING HYDROPEROXIDE POLYMERIZATION CATALYST AND ACRYLATE ACID DIESTER; **3,046,262,** same, ACCELERATED ANAEROBIC CURING COMPOSITIONS, **filed** Mar. 7, 1973, D.C., S.D.N.Y., Doc. 73–C–996, *Loctite Corp.* v. *Toagosei Chemical Industry Co. Ltd.*

2,918,109. (See 2,971,825.)

3,046,262. (See 2,895,950.)

3,076,623, D. G. Lyon, VARIABLE SHAPED AIRFOIL; **3,127,130,** same, **filed** Feb. 15, 1973, D.C., W.D. Wash. (Seattle), Doc. 119–73C2, *Donald G. Lyon* v. *Boeing Company.*

3,127,130. (See 3,076,623.)

3,142,510. (See 2,781,825.)

3,153,847, J. E. Lindberg, Jr., METHOD OF MAKING HEAT SENSORS; **3,154,772,** same, PREVENTION OF FALSE WARNING; **3,180,956,** same, PRESSURE ACTUATED ELECTRICAL SWITCH HAVING FLAT SUPPORT AT CLOSURE FOR PREVENTION OF OVERPRESSURE DAMAGE; **3,193,911,** same, METHOD FOR MAKING A PRESSURE-RESPONSIVE DEVICE; **3,196,423,** same, ALARM CIRCUIT WITH FALSE WARNING PREVENTION; **3,237,179,** same, HEAT DETECTION DEVICE WITH TEST SYSTEM; **3,277,860,** same, SENSOR FOR HEAT OR TEMPERATURE DETECTION AND FIRE DETECTION; **3,390,365,** same; **3,470,744,** same, TEMPERATURE DETECTION SENSOR; **3,485,101,** Lindberg, Cook and Cook, CONTINUOUSLY SUPPORTED SENSOR, **filed** Feb. 16, 1973, D.C., N.D. Calif. (San Francisco), Doc. C–73–0256, *John E. Lindberg, Inc.* v. *John E. Lindberg.*

3,154,772. (See 3,153,847.)

3,169,035. (See 2,781,825.)

3,180,956. (See 3,153,847.)

3,193,911. (See 3,153,847.)

3,196,423. (See 3,153,847.)

3,237,179. (See 3,153,847.)

3,239,952, Lange and Lange, SKI BOOT; **3,419,974,** R. B. Lange, same, **filed** Apr. 20, 1971, D.C. Colo. (Denver), Doc. C–3–47, *The Lange Co.* v. *Pepi's Sports, Inc.*

3,277,860. (See 3,153,847.)

3,313,443, Dial, Habegger and Kays, FLOATING COVER FOR A LIQUID STORAGE RESERVOIR, **filed** Feb. 16, 1973, D.C.N.J. (Trenton), Doc. C–219–73, *Globe Linings, Inc., Howard D. Webb and Arthur M. Lockhart* v. *Township of Wall.*

3,375,478. (See 2,740,027.)

3,390,365. (See 3,153,847.)

3,394,965. (See 2,781,825.)

3,417,450, R. M. Zell, METHOD FOR MAKING A PLUMBING VALVE BODY, **filed** Feb. 13, 1973, D.C. Conn. (Bridgeport), Doc. C–B–705, *Brass Craft Manufacturing Co.* v. *Teledyne Corporation.*

3,419,974. (See 3,239,952.)

3,454,008, L. A. Hendricks, SANITARY NAPKIN, **filed** Feb. 14, 1973, D.C., N.D. Calif. (San Francisco), Doc. C73–0241 ACW, *Laurel A. Hendricks* v. *Personal Products Company.*

3,470,744. (See 3,153,847.)

3,485,101. (See 3,153,847.)

3,518,604. (See 2,740,027.)

3,518,924, R. R. Gray, METHOD OF CONSTRUCTION FOR STREETS AND THE LIKE, **filed** Oct. 14, 1970, D.C., W.D. Tex. (San Antonio), Doc. SA 70–CA–381, *RRG Enterprises, Inc.* v. *Alson Inc.* Defendant Alson, officers, agents, employees, including Al Langston are enjoined, subject to executing acceptable license agreement with plaintiff, from infringing patent; defendant's counterclaim dismissed with prejudice, Feb. 23, 1973.

3,588,102, W. M. Cruse, THEATER STAGE SET CONTROL SYSTEM; **3,697,047,** same, FLUID ACTUATED STAGE CONTROL SYSTEM WITH FLUID FLOW LEADOUT SIGNAL, **filed** Feb. 16, 1973, D.C. Conn. (Bridgeport), Doc. C–B–715, *William M. Cruse* v. *Ralph Alswang et al.*

3,670,285. (See 2,740,027.)

3,680,560, Pannier, Jr., Reynolds and Sorenson, VACUUM DRAINAGE COLLECTING APPARATUS WITH DISPOSABLE LINER, filed Jan. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c141, *Sorenson Research Co.* v. *Inhalation Therapy Equipment Co.*

3,697,047. (See 3,558,102.)

D. 196,182, M. E. Quast, GOLF CLUB HEAD; **Reg. No. 768,141** (SHUR-LINE AND DESIGN), Martin E. Quast, filed Feb. 2, 1973, D.C. Minn. (Minneapolis), Doc. 4–73C72, *Martin E. Quast* v. *Shur-Sports, Inc.* (*formerly Capital Sports, Ltd.*) *and Douglas Wilmoth, Individually.*

D. 217,038, J. H. Cleave, IDENTIFICATION MARKER FOR AUTOMOBILES OR THE LIKE, filed Feb. 21, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–391–JWC, *John H. Cleave* v. *Harold Reed, doing business as Reed Enterprises.*

D. 219,118, Baker and Plecia, BOAT, filed Oct. 3, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2356–LTL, *Sidewinder Marine, Inc.* v. *Bell Industries and Schuster Custom Boats, Inc.* Same, filed Dec. 24, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2893–ALS, *Sidewinder Marine, Inc.* v. *Robert Burns et al.* Judgment, patent valid, defendants enjoined, Oct. 31, 1972.

Reg. No. 768,141. (See D. 196,182.)

Certificates of Correction for the Week of Oct. 9, 1973

Re. 27,525	3,716,871	3,730,059	3,735,488
Re. 27,626	3,717,278	3,730,160	3,735,743
Re. 27,672	3,717,490	3,730,173	3,735,783
D. 227,073	3,718,011	3,730,265	3,735,812
3,528,633	3,718,476	3,730,654	3,735,876
3,569,848	3,718,484	3,730,699	3,735,955
3,583,983	3,718,530	3,730,706	3,736,053
3,583,992	3,718,537	3,730,719	3,736,220
3,592,819	3,719,115	3,730,733	3,736,245
3,605,098	3,719,118	3,730,839	3,736,272
3,605,734	3,719,400	3,730,853	3,736,281
3,615,505	3,719,498	3,730,867	3,736,285
3,617,064	3,719,585	3,730,933	3,736,296
3,617,284	3,719,687	3,731,205	3,736,298
3,622,027	3,719,765	3,731,240	3,736,312
3,625,690	3,720,355	3,731,486	3,736,392
3,627,532	3,720,535	3,731,509	3,736,413
3,631,520	3,720,724	3,731,570	3,736,652
3,631,776	3,720,921	3,731,609	3,736,892
3,632,534	3,721,084	3,731,625	3,736,925
3,632,562	3,721,262	3,731,629	3,737,043
3,635,606	3,721,425	3,732,240	3,737,342
3,638,410	3,721,544	3,732,293	3,737,360
3,640,777	3,722,368	3,732,465	3,737,407
3,645,738	3,723,174	3,732,485	3,737,421
3,645,985	3,723,282	3,732,490	3,737,435
3,652,601	3,723,313	3,732,566	3,737,440
3,657,224	3,723,412	3,732,615	3,737,551
3,665,748	3,723,724	3,732,684	3,737,554
3,668,898	3,723,771	3,732,904	3,737,628
3,671,703	3,723,815	3,732,956	3,737,695
3,671,839	3,724,218	3,733,046	3,737,720
3,673,431	3,725,114	3,733,124	3,737,872
3,674,555	3,725,138	3,733,154	3,738,056
3,678,605	3,725,240	3,733,242	3,738,103
3,678,986	3,725,277	3,733,272	3,738,138
3,684,011	3,725,449	3,733,322	3,738,145
3,684,739	3,725,451	3,733,325	3,738,227
3,686,637	3,725,644	3,733,358	3,738,292
3,689,449	3,725,682	3,733,386	3,738,339
3,691,201	3,725,715	3,733,393	3,738,416
3,693,694	3,725,755	3,733,514	3,738,541
3,694,057	3,726,045	3,733,561	3,738,551
3,695,408	3,726,126	3,733,579	3,738,592
3,697,531	3,726,197	3,733,725	3,738,764
3,699,758	3,726,306	3,733,799	3,738,843
3,700,127	3,726,374	3,733,854	3,738,878
3,704,437	3,726,659	3,733,898	3,738,955
3,705,794	3,726,903	3,733,984	3,738,993
3,706,132	3,726,936	3,734,076	3,739,060
3,708,710	3,727,034	3,734,084	3,739,083
3,709,327	3,727,037	3,734,132	3,739,132
3,709,503	3,727,134	3,734,164	3,739,217
3,709,898	3,727,196	3,734,183	3,739,292
3,710,450	3,727,563	3,734,545	3,739,662
3,711,469	3,727,943	3,734,590	3,739,784
3,711,599	3,728,185	3,734,663	3,739,952
3,711,614	3,728,298	3,734,791	3,740,112
3,712,213	3,728,323	3,734,844	3,740,117
3,712,844	3,728,419	3,734,865	3,740,234
3,713,213	3,728,420	3,734,888	3,740,418
3,714,149	3,728,456	3,734,891	3,740,567
3,714,211	3,728,532	3,734,929	3,740,755
3,714,515	3,729,203	3,735,093	3,740,988
3,714,993	3,729,384	3,735,147	3,741,063
3,715,068	3,729,554	3,735,243	3,741,149
3,715,391	3,729,695	3,735,311	3,741,327
3,716,435	3,729,892	3,735,315	3,742,402
3,716,761	3,729,959	3,735,406	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th Street SW., Washington, DC. 20590

Patent application 300,250. Hydraulic Energy Absorber. Filed Oct. 24, 1972. PC $3.25/MF $0.95.

Patent application 325,392. Resonance Tire Inspection Unit. Filed Dec. 13, 1972. PC $3/MF $0.95.

U.S. DEPARTMENT OF COMMERCE
Assistant General Counsel for Administration, Washington, D.C. 20230

Patent 3,239,758. System for Measuring Peak Pulse Power Using Sampling and Comparison Techniques. Filed Sept. 10, 1962. Patented Mar. 8, 1966. Not available NTIS.

Patent 3,360,262. Apparatus for Moving and Aligning Limp Pieces of Material. Filed June 16, 1966. Patented Dec. 26, 1967. Not available NTIS.

Patent 3,463,256. Double Piston Gage. Filed Apr. 2, 1962. Patented Sept. 2, 1969. Not available NTIS.

Patent 3,515,089. Rudder. Filed Sept. 30, 1968. Patented June 2, 1970. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health; Chief, Patent Branch; Westwood Building, Bethesda, Md. 20014

Patent application 289,369. Antibodies and Plasma Anti-Platelet Factor in Patients With Idiopathic Thrombocytopenic Purpura. Filed Aug. 31, 1972. PC $3/MF $0.95.

Patent application 302,600. Micro Miniature Flow Check Valve Assembly. Filed Oct. 31, 1972. PC $3/MF $0.95.

Patent application 314,508. Switch Failure Monitoring Device. Filed Dec. 13, 1972. PC $3/MF $0.95.

Patent application 328,075. Regenerative Heat Engine. Filed Jan. 30, 1973. PC $3/MF $0.95.

Patent application 344,416. Gas Mixing Device. Filed Mar. 23, 1973. PC $3/MF $0.95.

Patent application 348,666. A Stable Hemag-glutination Technique for Measuring Morphine and Morphine Derivatives. Filed Apr. 6, 1973. PC $3/MF $0.95.

Patent application 354,098. Isolation and Purification of Active Principle of Fruit of Synsepalum Dulcificum and Method of Treatment of Obesity. Filed Apr. 24, 1973. PC $3/MF $0.95.

Patent application 354,673. Respirator. Filed Apr. 26, 1973. PC $3/MF $0.95.

Patent 3,719,763. Binary Amino Ovicidal Composition. Filed Sept. 29, 1969. Patented Mar. 6, 1973. Not available NTIS.

Patent 3,733,132. Collimator for Binocular Instruments. Filed Oct. 26, 1971. Patented May 15, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW., Washington, D.C. 20240

Patent application 335,397. Copper Ion Selective Sensor. Filed Feb. 23, 1973. PC $3/MF $0.95.

Patent application 339,687. Continuous Process for Mechanically Separating Materials Contained in Urban Refuse. Filed Mar. 9, 1973. PC $3/MF $0.95.

Patent application 342,920. Decomposition of Chalcopyrite. Filed Mar. 19, 1973. PC $3/MF $0.95.

Patent application 343,919. Pretreatment of Saline Water Prior to Desalination. Filed Mar. 19, 1973. PC $3/MF $0.95.

Patent application 344,697. Product Separator. Filed Mar. 26, 1973. PC $3/MF $0.95.

Patent application 356,221. Combined Noise Exposure Meter and Readout Unit. Filed May 1, 1973. PC $3/MF $0.95.

Patent 3,734,989. Fiber Bundle Assembly. Filed Aug. 13, 1971. Patented May 22, 1973. Not available NTIS.

Patent 3,736,239. Neutralization of Metal Containing Wastes. Filed Mar. 18, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,736,250. Catalytic Hydrogenation Using Zinc Chloride Molten Salt Mixture as a Catalyst. Filed Nov. 17, 1971. Patented May 29, 1973. Not available NTIS.

Patent 3,736,908. System for Starting a Fluidized Bed Boiler. Filed Oct. 8, 1970. Patented June 12, 1973. Not available NTIS.

Patent 3,738,746. Automatic Stereoscopic Profiling Systems. Filed Dec. 8, 1970. Patented June 12, 1973. Not available NTIS.

Patent 3,737,384. Decomposition of Halogenated Organic Compounds Using Metallic Couples. Filed Dec. 23, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,738,290. Dual Pulse Jet System for the Combustion of High Ash Fuel. Filed Oct. 14, 1971. Patented June 12, 1973. Not available NTIS.

Patent 3,739,061. Manufacture of Synthetic Rutile. Filed Aug. 10, 1971. Patented June 12, 1973. Not available NTIS.

[FR Doc. 73-19369; Filed 9-11-73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 15, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	9-07-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-02-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Fore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-13-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-01-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-03-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-07-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-15-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-29-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-03-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-20-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	8-07-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-03-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-25-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-05-72

Expiration of patents: The patents within the range of numbers indicated below expire during October 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,764,758 to 2,769,171, inclusive
Plant Patents..... Numbers 1,522 to 1,525, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 9, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T915,001
FORMING POLYETHYLENE TEREPHTHALATE

David Harris Berkebile and Kenneth Leith Knox, Circleville, Ohio, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 81,312, Oct. 16, 1970. This application July 10, 1972, Ser. No. 269,948

Int. Cl. B29c *17/04, 25/00*
U.S. Cl. 264—89
1 Sheet Drawing. 8 Pages Specification

A process for forming a sheet of polyethylene terephthalate into a mold configuration, the process comprising

(a) heating a sheet of polyethylene terephthalate having an intrinsic viscosity of about from 0.50 to 0.59 and a degree of crystallization of about from 0 to 25% to a temperature of about from 75° to 180° C.;
(b) forcing the heated sheet onto a mold surface; and
(c) heat setting the shaped sheet at a temperature of about from 125° to 220° C. and for a period of time sufficient to increase the degree of crystallization of the formed article to about from 25 to 60%.

Particularly useful articles that can be formed by the process include trays having a bottom panel, side walls connected to the bottom panel and a continuous outwardly extending flange connected to the upper edges of the side walls; these trays can be used for food containers, which are heatable in either conventional or microwave ovens and are strong and dimensionally stable at temperatures up to about 460° F. Adhesive can be applied to the upper surfaces of the flange to permit the application of a cover film to the tray.

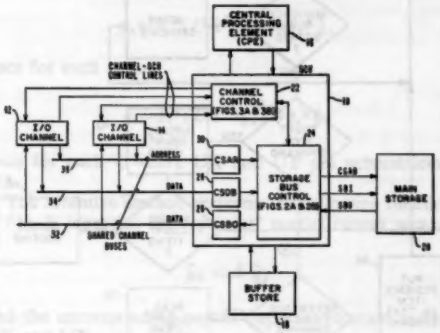
T915,002
CHANNEL-MEMORY BUS CONTROL

Gerry D. Granito, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of application Ser. No. 46,081, June 15, 1970. This application Oct. 13, 1972, Ser. No. 294,707

Int. Cl. G11c *25/00*
U.S. Cl. 340—172.5
8 Sheets Drawing. 21 Pages Specification

A large scale data processing system having a high speed low capacity buffer store for buffering data fetch and data store requests to a low speed high capacity interleaved main storage. Requests for storage may come from a plurality of channels which communicate with a storage control unit (SCU) over shared address and data buses. Multiple channel requests are sequenced over this shared bus. The storage control unit controls this sequencing by means of priority circuits and upon granting priority to one of the channels, provides for memory selection. In the case of multiple simultaneous channel requests, the storage control unit unconditionally accepts a request every memory cycle. Upon arrival at the storage control unit, the address and data corresponding to the request are held in registers pending the availability of the requested storage thereby freeing the channel bus for acceptance of another request. The maximum delay that the registered request can encounter is one memory cycle, therefore, the next accepted request will find the



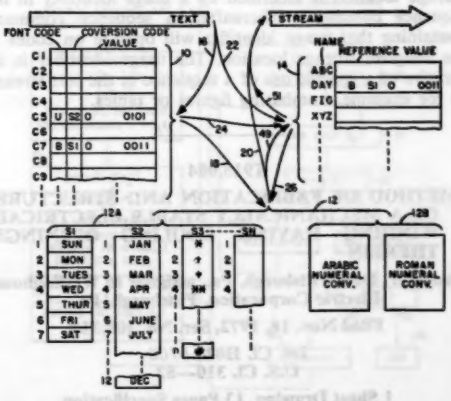
register available when it arrives at the storage control unit.

T915,003
COMPUTER PROGRAM FOR INTERPRETING SYMBOLIC LANGUAGE IN A TEXT STREAM

Henry T. Norton, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

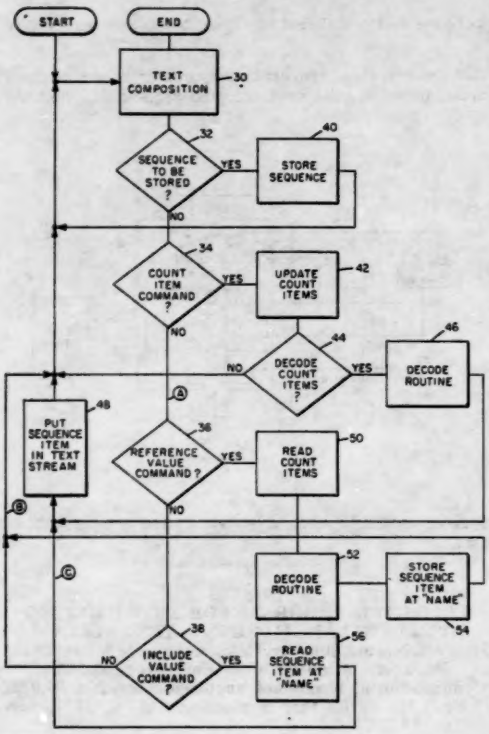
Continuation of abandoned application Ser. No. 99,938, Dec. 21, 1970. This application Oct. 6, 1972, Ser. No. 295,781

Int. Cl. G06f *9/00*
U.S. Cl. 444—1
5 Sheets Drawing. 35 Pages Specification



Sequences of graphic forms to be used in text composition are represented by symbolic sequence commands in

the text stream to be processed. The sequence commands are variable and are monitored by a data processing system under program control. Initially, a sequence command causes the data processing system to assign one storage location for sequence codes in that command. The



storage location is identified by a usage identifier in the sequence command. Thereafter, a sequence command containing that usage identifier will operate on codes in the assigned storage location. The usage identifier is indicative of a specific use of a sequence in the text stream, as for example, numbering figures or tables.

T915,004

METHOD OF FABRICATION AND STRUCTURE OF A MECHANICALLY STABLE ELECTRICAL WINDING HAVING COOLING OPENINGS THEREIN

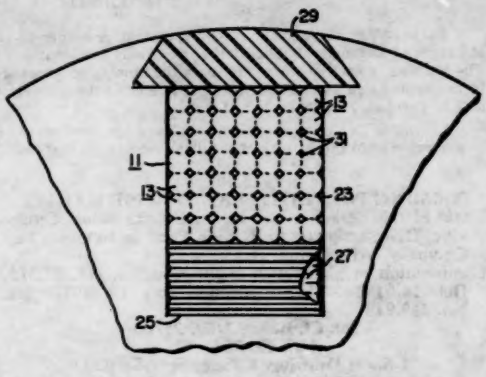
Daniel W. Deis, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1972, Ser. No. 307,314

Int. Cl. H02k 9/00
U.S. Cl. 310—52

1 Sheet Drawing. 13 Pages Specification

Insulated wire coated with a bonding material is formed into cables and wound in an appropriate chamber. A pressurizing material is utilized to compress the wires in the chamber. The pressurizing material is then hardened to maintain the wires in the compressed state. Heat is then applied to cause the bonding material to bond the



wires together and rigidly maintain them in the positions they occupy when compressed.

T915,005

PROCESS FOR PREPARING CALCIUM HYDROXIDE DISPERSIONS IN OIL-SOLUBLE CALCIUM SULFONATE SOLUTIONS

Samuel C. Thomas, Jr., Prospect Park, and James S. Garner, Chester, Pa., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of application Ser. No. 176,339, Aug. 3, 1971. This application Dec. 22, 1972, Ser. No. 317,578

Int. Cl. C10m 1/40, 3/34
U.S. Cl. 252—33.4

No Drawing. 12 Pages Specification

A process for preparing calcium hydroxide dispersions in oil-soluble calcium sulfonate solutions. The process comprises admixing an oil-soluble sulfonic acid, a water-immiscible organic medium, calcium oxide and a lower alkoxy ethanol and thereafter refluxing, hydrolyzing and distilling said mixture to obtain a calcium hydroxide dispersion in an oil soluble calcium sulfonate solution. Lubricating oils containing such dispersions are especially useful as lubricants for diesel engines.

T915,006

COORDINATE-ORDERING FOR CONTOUR PLOTTING

Paul Arnold Friedman, Morristown, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 213,078, Dec. 28, 1971. This application Feb. 9, 1973, Ser. No. 331,143

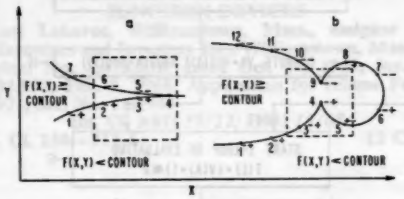
Int. Cl. G06f 15/20
U.S. Cl. 444—1

4 Sheets Drawing. 34 Pages Specification

A computer program to derive and control plotting of contour representing lines of constant values within a linear, 2-dimensional matrix. The program uses an algorithm which orders coordinate of points on a contour, enabling continuous progressions along the contour. The basic steps within the contour ordering algorithm may be defined as:

(1) determination of available points as potential candidates;

(2) use of a search window to discard points too remote to be a valid successor candidate;
(3) classifying successor candidates to enable selection of the best one as the valid successor; and



(4) when no successor candidates are found or selection of the best one cannot be made, the contour segment is processed or stored, and the algorithm proceed to the next available starting point.

The program can be used to determine closure and discrete contours in a single or multiple contour environment, with particular application to plotting and analysis. The invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Army.

T915,007

METHOD FOR EFFECTING BACK SUBSTITUTION IN SPARSE MATRIX TECHNIQUES

Robert K. Brayton, Briarcliff Manor, and Fred G. Gustavson and Gary D. Hachtel, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 5, 1973, Ser. No. 348,385

Int. Cl. G06f 15/32
U.S. Cl. 444—1

1 Sheet Drawing. 20 Pages Specification

A method is described which incorporates sparse matrix techniques for efficiently effecting the back substitution step in the solving of the linear system

$$\frac{\partial f}{\partial x}(x,t)\Delta x = -f(x,t) \tag{1}$$

for various values of t, and for each t, for various values of x, the solving of such linear system usually being necessary in the solving of non-linear dynamic systems. The required steps in the solving of the linear system are L/U (lower, upper) triangular factorization, forward elimination and the above-mentioned back substitution. Equation 1 may be restated as

$$A(x,t)y = e_N = \text{col}\ (0, 0, \ldots, 1) \tag{2a}$$

where

$$A = \begin{bmatrix} \left[\frac{\partial f}{\partial x}\right] & [f] \\ [0] & [1] \end{bmatrix}, \quad y \doteq \begin{bmatrix} [\Delta x] \\ 1 \end{bmatrix} \tag{2b}$$

and utilizing 1–2–3 GNSO technique, the solving of Equations 2a and 2b implies the successive operations of factorization

$$L_A/U_A = A(x,t) \tag{3}$$

and back substitution

$$U_A y = e_N \tag{4}$$

The inventive method overcome the problem which arises in the solution of Equation 4 in that there are required as outputs for each value of x and t only partial answers

$$y_x = \theta_x{}^* y \tag{5}$$

and

$$y_t = \theta_t{}^* y \tag{6}$$

wherein θ_x and θ_t are logical vectors and "*" represents scalar multiplication. The partial answers for the y problem in back substitution is the ascertaining of the sparsest matrices UX and UT from which there may be obtained y_x and y_t utilizing the partial back substitutions

$$y_x = \theta_x{}^*(UX^{-1}\varepsilon_N) \doteq \theta_x{}^* \hat{y}_x \tag{7}$$

once for each x, and

$$y_t = \theta_t{}^*(UT^{-1}y_x) \doteq \theta_t{}^* \hat{y}_t \tag{8}$$

once for each t, where UX and UT are submatrices of UA.

The inventive method performs the following functions:

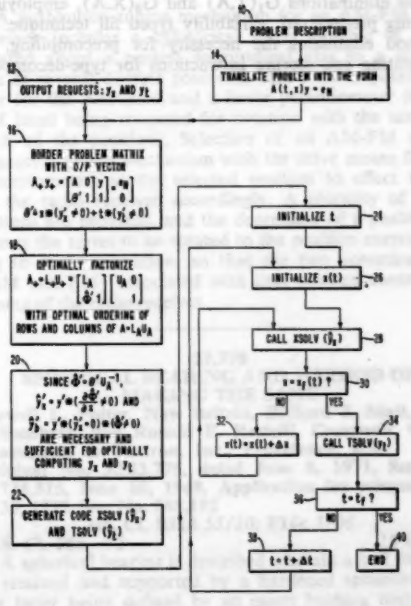
(1) It identifies the "sparsest" partial output vectors

$$\hat{y}_x \text{ and } \hat{y}_t$$

and the corresponding partial back substitution matrices UX and UT;

(2) It makes identification (1) solely from the process of Gauss elimination whereby the operation count for the partial back substitution is accounted for during the selection of pivots;

(3) It converts algorithms for minimizing L/U fac-


10
PROBLEM DESCRIPTION
12
OUTPUT REQUESTS: y_x AND y_t
14
TRANSLATE PROBLEM INTO THE FORM $A(t,x)y = e_N$
16
BORDER PROBLEM MATRIX WITH O/P VECTOR
$A_0 X_0 = \begin{bmatrix} A & 0 \\ \theta' & 1 \end{bmatrix}\begin{bmatrix} y \\ 1 \end{bmatrix} = \begin{bmatrix} e_N \\ 0 \end{bmatrix}$
$\theta'_x = \theta(y'_x \neq 0) + t\theta(y'_t \neq 0)$
18
OPTIMALLY FACTORIZE
$A_0 = L_A U_A = \begin{bmatrix} L_A & \\ \hat{\theta}' & 1 \end{bmatrix}\begin{bmatrix} U_A & 0 \\ & 1 \end{bmatrix}$
WITH OPTIMAL ORDERING OF ROWS AND COLUMNS OF $A = L_A U_A$
20
SINCE $\hat{\theta}' = \theta' U_A^{-1}$,
$\hat{y}'_x = y'\theta\left(\frac{\partial \hat{y}'}{\partial x} \neq 0\right)$ AND
$\hat{y}'_t = y'\theta(\hat{y}'_x = 0)\theta(\hat{\theta}' \neq 0)$
ARE NECESSARY AND SUFFICIENT FOR OPTIMALLY COMPUTING $\hat{y}_x$ AND $\hat{y}_t$
22
GENERATE CODE XSOLV ($\hat{y}_x$) AND TSOLV ($\hat{y}_t$)
24
INITIALIZE t
26
INITIALIZE x(t)
28
CALL XSOLV ($\hat{y}_x$)
30
$x = x_f(t)$?
NO
YES
32
$x(t) = x(t) + \Delta x$
34
CALL TSOLV ($\hat{y}_t$)
36
$t = t_f$?
NO
YES
38
$t = t + \Delta t$
40
END

torization of matrices with x and t variability type into algorithms which minimize multiples for the combined operations of factorization and partial back substitution, i.e., it achieves steps (1)–(3);

(4) It achieves steps (1)–(3) in the case of more than two distinct variability types;

(5) It applies as written to cases where A is irreducible but achieves steps (1)–(3) with reducible matrices.

T915,008

METHOD FOR EFFECTING GAUSS ELIMINATION IN SPARSE MATRIX TECHNIQUES

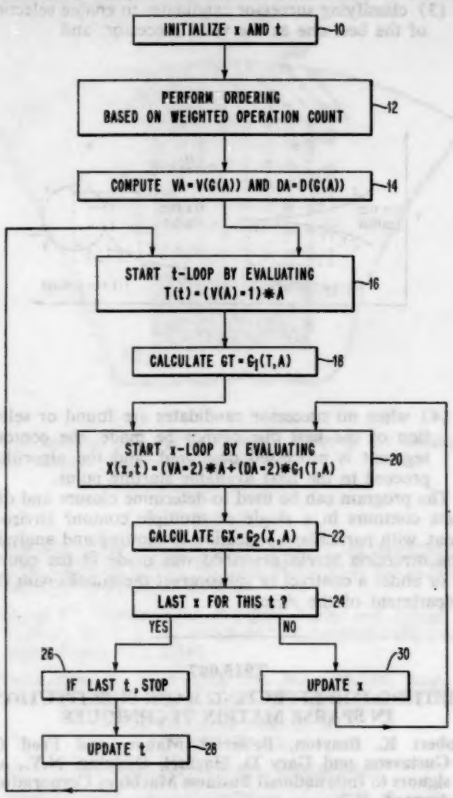
Fred G. Gustavson and Gary D. Hachtel, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,833

Int. Cl. G06f 7/38
U.S. Cl. 444—1

3 Sheets Drawing. 32 Pages Specification

A novel method is disclosed for solving the equation $A[t,x]y=e_N=\text{col}\ (0,0,\ .\ .\ .\ ,0,1)$ for various values of t, and, for each t, for many distinct values of x, and wherein, there is combined the storage advantages of the "looping, pre-indexed fill" technique with the inherent speed and storage advantages of the 1–2–3 GNSO technique for obtaining a minimum storage, medium speed algorithm for solving the above equation. The method defines a new type of decomposition of the Gauss elimination matrix, G(A) of a given matrix $A(x,t)$ into "partial" Gauss elimination of distinct matrices $T(t)$ and $X(x,t)$, wherein T contains the necessary and sufficient data structure for t-type operations in G(A), i.e., T contains only nonzero elements which are used in wholly t-type operations in G(A), and X contains the necessary and sufficient data structure for the x-type operations. In addition, the method defines algorithms for the two distinct partial Gauss eliminations $G_1(T,A)$ and $G_2(X,A)$, employing a looping pre-indexed, variability typed fill technique. The method eliminates the necessity for precompiling, i.e., generating and storing instructions for type-decomposed Gauss elimination of the 1–2–3 GNSO approach, and extends immediately to the case of three or more distinct variability types appearing as arguments in the coefficients of the matrix A.



REISSUES

OCTOBER 9, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,775
PHOTOELECTRIC INDUCED P-N JUNCTION DEVICES

Kurt Lehovec, Williamstown, Mass., assignor to Inventors and Investors Inc., Williamstown, Mass.

Original No. 3,473,032, dated Oct. 14, 1969, Ser. No. 703,958, Feb. 8, 1968. Application for reissue Feb. 5, 1971, Ser. No. 112,937

Int. Cl. A01j *39/12;* H01l *15/08*

U.S. Cl. 250—211 J 12 Claims

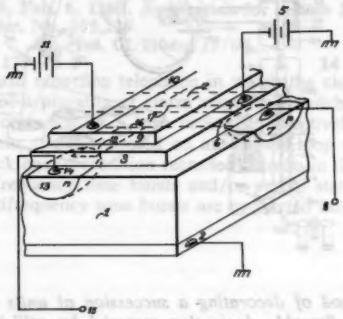


Photo emitting or else photosensitive devices are constructed from the p-n junction between p- and n-regions induced in a high resistivity semiconducting body by means of electric fields applied between said body and electrode pairs separated from this body by an insulating film. Provisions are made for shifting the induced p- and n-regions in the underlying body to different positions for adaption to desired circuit functions.

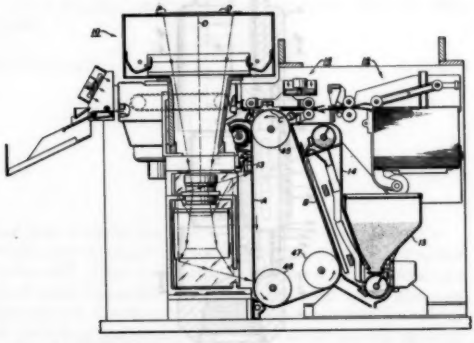
27,776
ROLLER ASSEMBLY FOR BELT-TYPE PHOTORECEPTOR IN ELECTROSTATIC PRINTING MACHINES

Lyman H. Turner, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Original No. 3,536,323, dated Oct. 27, 1970, Ser. No. 731,897, May 24, 1968. Application for reissue Dec. 18, 1970, Ser. No. 99,431

Int. Cl. G03g *15/00*

U.S. Cl. 355—16 2 Claims



A belt assembly upon which an endless belt is arranged for movement around a plurality of supporting rollers supported in a frame which also has means accessible from one side for attachment to a cantilever fixed support. Means are also provided on the frame for retracting one of the rollers permitting removal and installation of a belt.

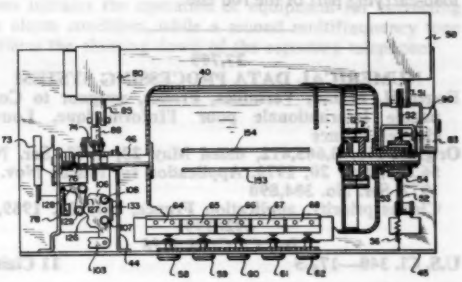
27,777
TUNER MECHANISM

Raymond I. Walsh, Orchard Lake, Mich., assignor to Motorola, Inc., Franklin Park, Ill.

Original No. 3,596,216, dated July 27, 1971, Ser. No. 848,237, Aug. 7, 1969. Application for reissue Dec. 16, 1971, Ser. No. 208,954

Int. Cl. H03j *5/06, 5/08*

U.S. Cl. 334—7 17 Claims



A pushbutton tuning mechanism for an AM-FM radio receiver includes a cylindrical turret capable of being rotated about a central longitudinal axis to a selected one of several discrete positions, with a linear potentiometer for the AM band and a linear potentiometer for the FM band being mounted for rotation with the turret at each of the positions. Selection of an AM-FM switch engages a clutch mechanism with the drive means for the potentiometers at the selected position to effect tuning of the radio receiver accordingly. A plurality of pushbuttons are provided, and the depression of a pushbutton causes the turret to be rotated to the position corresponding to that pushbutton, so that the two potentiometers (AM and FM) associated with that position control the tuning of the radio receiver.

27,778
SPHERICAL BEARING AND METHOD OF MAKING THE SAME

Howell L. Potter, New Britain, Richard J. Matt, West Simsbury, and Ronald E. Restelli, Cromwell, Conn., assignors to Textron, Inc., Providence, R.I.

Original No. 3,583,775, dated June 8, 1971, Ser. No. 738,515, June 20, 1968. Application for reissue June 30, 1972, Ser. No. 268,192

Int. Cl. B21d *53/10;* F16c *1/06*

U.S. Cl. 308—72 15 Claims

A spherical bearing is described wherein a ball member is retained and supported by a hardened spherical seat, the latter being defined by an insert bushing that is integrated into a socket structure.

The bushing with a truncated bearing ball nested by the inner bushing surface is fusion welded around the outer

periphery of the bushing to a housing to form an integral load-carrying part thereof. The fusion weld also extends a substantial axial distance or depth and is preferably made with an energized beam such as a beam of elec-

trons. In the formation of a spherical bearing for a rod end, a pair of annular bushings is formed with each bushing welded to the rod end housing to form an integral load-carrying part of the rod end.

27,779

NUMERICAL DATA PROCESSING SYSTEM

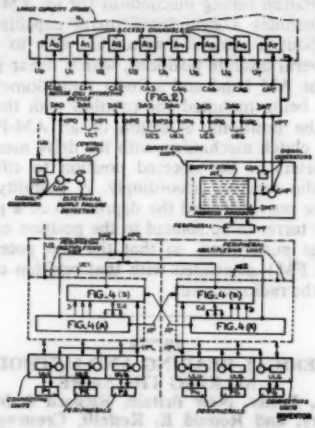
Roger H. Briand, Versailles, France, assignor to Compagnie Internationale pour l'Informatique, Louveciennes, France

Original No. 3,665,412, dated May 23, 1972, Ser. No. 56,285, July 20, 1970. Application for reissue Nov. 9, 1972, Ser. No. 304,890

Claims priority, application France, July 31, 1969, 6926199

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **11 Claims**



A numerical data processing system is disclosed which is comprised of a general large capacity information store and a plurality of processors selectively connectable to as many access channels of said store from the selective activation of as many store access calling lines. Part at least of said processors are provided with additional store access calling lines which are associated with hardware equipment for organizing a hierarchy of priority conflicting access calls from said processors to said store.

27,780

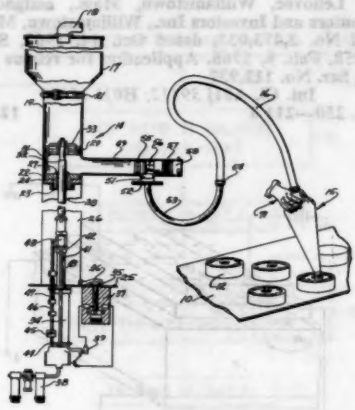
METHOD AND APPARATUS FOR DECORATING PASTRY AND THE LIKE

John MacManus, 143—16 22nd Road, Whitestone, N.Y. 11357

Original No. 3,285,202, dated Nov. 15, 1966, Ser. No. 396,606, Sept. 15, 1964. Application for reissue Mar. 13, 1972, Ser. No. 234,420

Int. Cl. A21d *13/08*; A23g *3/20, 3/28*

U.S. Cl. 99—92 **21 Claims**



Method of decorating a succession of units of pastry with a flowable decorating material by utilizing pump pressure to dispense the material thru a flexible hose into a flexible bag having a decorating tip. The filled bag is then manipulated thereby dispensing the material onto the article to be decorated. An apparatus is disclosed for carrying out the above described method.

27,781

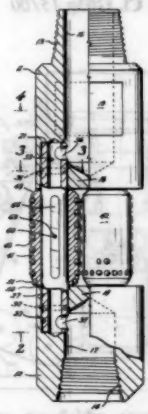
REAMER-STABILIZER

William R. Garrett, Midland, Tex., assignor to Smith International, Inc.

Original No. 3,494,432, dated Feb. 10, 1970, Ser. No. 723,639, Mar. 14, 1968, which is a continuation-in-part of abandoned application Ser. No. 598,737, Dec. 2, 1966. Application for reissue Feb. 4, 1972, Ser. No. 223,684

Int. Cl. E21b *9/08, 9/24*; E21c *23/00*

U.S. Cl. 175—339 **19 Claims**



Combination reamer-stabilizer for air drilling employs three rollers mounted on parallel hollow shafts each press

fitted into a blind threaded connector having a hole extending part way through and communicating with radial ports in hollow shafts to convey air through unit. Locking pins through shafts and connectors prevent separation. Rollers have sintered tungsten carbide inserts around outer periphery to both reduce roller wear and ream hole being bored. Radial hole through each shaft bleeds air to a flat along side of shaft to blow foreign matter out of space between roller and shaft.

27,782
TELEPHONE REPORTING SET

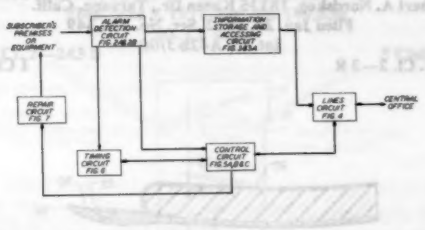
Raymond James Andrews, San Diego, Gary Conway Fields, Oakland, and Harold Kirkwood Thompson, San Anselmo, Calif., assignors to American Telephone and Telegraph Company, New York, N.Y.

Original No. 3,531,597, dated Sept. 29, 1970, Ser. No. 614,310, Feb. 6, 1967. Application for reissue Jan. 11, 1971, Ser. No. 105,229

Int. Cl. H04m *11/04*

U.S. Cl. 179—5 P **14 Claims**

An alarm reporting telephone in which the closure of any one of a plurality of alarm responsive switches initiates the operation of a tape deck that selectively plays one of four tracks recorded on an endless loop of tape. Each track has information recorded thereon in the form of multifrequency tone bursts and/or verbal statements. The multifrequency tone bursts are converted into corresponding switch closures by a multifrequency signal receiver to interrupt a telephone line so as to transmit pulses thereover corresponding to a predetermined telephone number, to cause the tape deck to switch from one tape track to another, and to reset thermal timers. The verbal statements are transmitted out on the telephone line to


SUBSCRIBER'S PREMISES OR EQUIPMENT
ALARM DETECTION CIRCUIT FIG. 2A&B
INFORMATION STORAGE AND ACCESSING CIRCUIT FIG. 3A5A
REPAIR CIRCUIT FIG. 7
LINES CIRCUIT FIG. 4
CENTRAL OFFICE
TIMING CIRCUIT FIG. 6
CONTROL CIRCUIT FIG. 5A,B&C

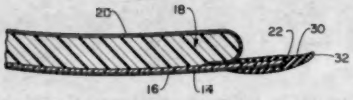
the called station which exercises control over the reporting telephone by the transmission thereto of three different multifrequency tones. One of the three multifrequency tones initiates the operation of equipment for correcting the alarm condition, while a second multifrequency tone initiates the shutting down of the reporting telephone.

PATENTS

GRANTED OCTOBER 9, 1973

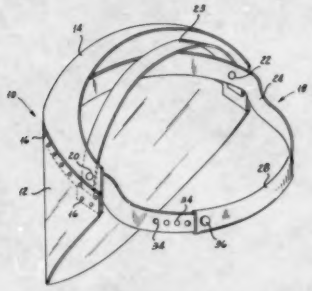
GENERAL AND MECHANICAL

3,763,494
POWER BOAT RACING HELMET
Robert A. Nordskog, 18135 Karen Dr., Tarzana, Calif.
Filed Jan. 24, 1972, Ser. No. 220,349
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **1 Claim**



A helmet designed specifically for power boat racing wherein the helmet is constructed of a lightweight glass fibrous material with an interior foam cushioning material, a rubber flexible lip completely surrounds the helmet opening, the lip to tightly engage the head and neck of the wearer.

3,763,495
FACE SHIELD HEADGEAR
Armand De Angelis, Southbridge, Mass., assignor to Omnitech, Inc., Southbridge, Mass.
Filed Dec. 21, 1971, Ser. No. 210,410
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **7 Claims**

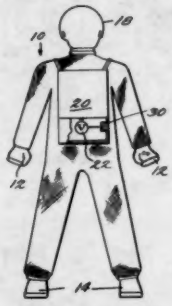


Improved Headgear for a transparent face shield in which one end of a headband formed of flexible but non-elastic material is housed in, and is connected to, one end of a tube or sleeve of elastic material and the other end of which is housed in the tube and is adjustably connected to the other end of the tube by any suitable means such as by a snap carried by the sleeve adapted selectively to engage in one of a plurality of holes in the band so that the engaged hole and the snap are enclosed by the sleeve.

3,763,496
NECKTIE BAR
Arthur Miller, Skokie, Ill., assignor to Steel Classic Neckwear Corporation, Chicago, Ill.
Filed May 25, 1972, Ser. No. 256,828
Int. Cl. A41d *27/12*
U.S. Cl. 2—46 **2 Claims**

A necktie bar is provided which includes a roller having a flexible screen wound thereon. The flexible screen may be extended from the necktie bar to cover the necktie during eating or drinking.

3,763,497
FIRE SATE OR BURN PREVENTIVE CLOTHING
Jack Leach, Greensboro, N.C., assignor to Burlington Industries Inc., Greensboro, N.C.
Filed Apr. 29, 1971, Ser. No. 138,732
Int. Cl. A41d *00/00*
U.S. Cl. 2—81 **21 Claims**



A fire-resistant garment is constructed of inner and outer fabric layers which define a region to which a source of non-combustible gas is connected through a valve. The valve is operable either manually or automatically to introduce the gas to this region when fire or heat is encountered. The gas leaks through the porous outer layer to reduce combustion on that layer and also creates an insulating space between the layers. The layers may be made of cotton treated with a fire-resistant material or of noncombustible fibers.

3,763,498

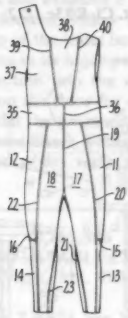
UNDERWATER GARMENT AND METHOD OF MAKING

Carl T. Rector, 2408 Meadow Ln., Eureka, Calif.

Continuation of Ser. No. 8,233, Feb. 3, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 246,567

Int. Cl. B63c 11/04; A41d 1/06

U.S. Cl. 2—2.1 R 6 Claims



A garment construction for making underwater garments that may be made in several different sizes using many of the same or substantially identical panels and other key panels of varying dimension and which are cut to fit the garment to a particular individual.

In an underwater garment construction having a lower portion comprising a pair of thigh-hip panels extending from the waist to the knee, a pair of leg panels extending from the knee to the ankle, one knee panel being connected to one thigh-hip panel, and a pair of key panels extending from the waist to the ankle, each key panel being connected to one pair of thigh-hip and leg panels, the width of said key panel being precisely cut to provide exact size and fit for a particular individual.

An underwater garment comprising trousers, a chest panel extending around the chest of the wearer and connecting to a back panel, said back panel being cut to a particular width to fit a particular individual, and a waist panel connected end-to-end and joined to said trousers, chest and back panels, the length and width of said waist panel being cut to fit the height and girth of a particular individual.

3,763,499

TROUSERS AND THE METHOD OF MANUFACTURE

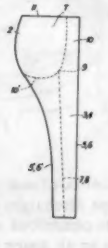
Karel Bartos, and Vladislav Bezemek, both of Brno, Czechoslovakia, assignors to Vyzkumny ustav pletarsky, Brno, Czechoslovakia

Filed Oct. 26, 1970, Ser. No. 83,882

Claims priority, application Czechoslovakia, Oct. 29, 1969, 711969

Int. Cl. A41d 1/06

U.S. Cl. 2—227 6 Claims



A trouser formed of elastic shrinkable material in one piece form having a torso stabilized in stretched condition and leg portions stabilized in shrunken condition. A method for forming said trousers from a flat sheet or tubular form by cutting and joining selected edges and heat treating the fabric.

Apparatus comprising means for molding said joined trousers in stabilized form.

3,763,500

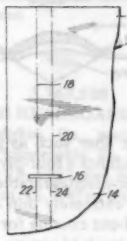
PLEATED GARMENT PATTERN AND METHOD

Leonard Erischer, 4 Jeffrey Way, White Plains, N.Y.

Filed June 3, 1971, Ser. No. 149,636

Int. Cl. A41d

U.S. Cl. 2—243 B 5 Claims



A pattern for forming a pleated garment is disclosed as including a plurality of folds such that a top zipper portion includes a reverse fold and a bottom, under-zipper portion includes a forward fold at the respective edge areas. The pattern thereby produces a garment with a continuous pleating pattern and one pleat for overlying the zipper of the garment, thereby hiding it from view. A method for forming and assembling two garment members with a zipper is also disclosed, the method including the steps of prefolding and precutting the pattern for the garment such that a reverse fold is formed in the zipper portion thereof and the zipper teeth are automatically aligned with a crease on the under-zipper portion of the garment. In this way, a semi-automatic zipper aligning and assembly procedure is accomplished for a pleated garment.

3,763,501

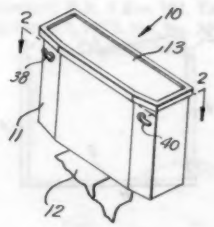
WATER CONSERVATION FLUSH TANK

Samuel C. Minardi, Jr., 4314 Riverview Ave., Tampa, Fla.

Filed Dec. 20, 1972, Ser. No. 316,721

Int. Cl. E03d 1/32, 5/02, 5/10

U.S. Cl. 4—67 A 3 Claims



A water conservation flush tank in which two separate valve seats are formed in the flush tank integrally in the casting of the tank with the valve seats vertically spaced so that the full flush tank capacity is flushed through the lower valve seat and only a portion of the capacity of the flush tank is flushed through the upper valve seat. Each of the valve seats are closed by conventional flush valves separately controlled by individual flush handles. By using the upper valve seat a portion of the flush tank capacity may be used to flush the toilet following urination and the lower valve seat can be opened to flush the toilet with a more positive action following defecation.

3,763,502
DISPOSABLE ARTICLE LINER

David H. E. Laumann, Freehold, N.J., assignor to Richard Suren Keoseian, New York, N.Y.

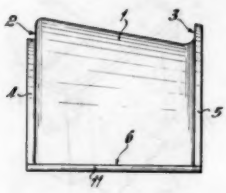
Filed Jan. 9, 1969, Ser. No. 790,066
Int. Cl. A61g 9/00
U.S. Cl. 4—112 5 Claims

A disposable article liner such as for bedpans and emesis basins is provided which has a four-ply construction consisting of a base layer of water-disintegratable paper such as tissue or toilet paper stock, an extremely thin coating of polyethylene which serves as a hold-out coating for a subsequent thin layer of a continuous water-insoluble coating which may be made of either wax modified for adhesion and flexibility with 5 to 40% ethyl vinyl acetate polyethylene, or other hydrophobic coating materials such as silicates, silicones or cellulose derivatives such as ethyl cellulose or nitro-cellulose, and lastly, an additional top layer of the same water-disintegratable paper used for the base layer, adhered to the insoluble water-repellent coating. The liner is very thin but of adequate tensile strength and resistance to human excrement but disintegrates in approximately five to ten seconds in contact with water when deposited in a toilet bowl or disposal system. Other waxes, paraffins and coatings of still other water-insoluble materials may be substituted which have the water resistant properties required.

3,763,503
ROOF FOR SWIMMING POOLS

Willi Volke, Binsbachineg 1, D7519, Muhlbach, Germany

Filed Apr. 18, 1972, Ser. No. 245,213
Claims priority, application Germany, Apr. 20, 1971, P 21 19 009.0
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.12 2 Claims

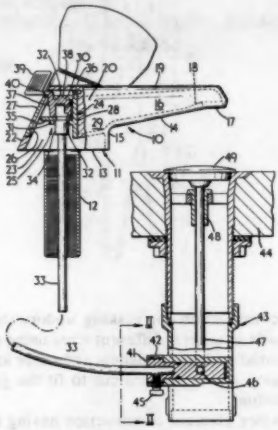


A roof for swimming pools consisting of a plurality of convex, detachable and connectable coverings, the surface of which is tapered in height and width, extending in opposite front and rear faces deflected downwardly and inwardly at the broader end and deflected upwardly and outwardly at the tapered end, and having border strips parallel to the surface of the coverings, provided at the lower and inner edge of the inwardly deflected face and at the upper and outer edge of the outwardly deflected edge, permitting the broader end of the covering and the tapered end of the adjacent covering to be sealed, and permitting the coverings to be piled up when not in use.

3,763,504
FLUID CONTROL TAP AND PLUG ASSEMBLY

Bernard Arthur Parsons, Birmingham, Warwickshire, England, assignor to IMI Developments Limited, Birmingham, England

Filed July 26, 1971, Ser. No. 165,984
Claims priority, application Great Britain, July 28, 1970, 36,508/70
Int. Cl. E03c 1/22, 1/23
U.S. Cl. 4—203 4 Claims

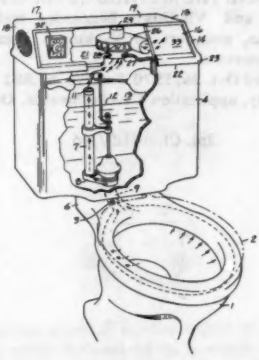


A fluid flow control tap and plug assembly in which there is a torsion means interconnecting the tap and plug to move the plug, so as to open or close the waste water outlet, a terminal element pivotally mounted in a chamber of the tap holding one end of the torsion means, and a manually operable knob projecting from the tap to effect rotation of the terminal element and the torsion means.

3,763,505
TOILET VENTILATION DEVICE

Joseph P. Zimmerman, 3868 Shadowhill Dr., Santa Rosa, Calif.

Filed Feb. 17, 1972, Ser. No. 227,499
Int. Cl. A47k 3/22; E03d 9/04, 13/00
U.S. Cl. 4—213 2 Claims



In a toilet having a toilet bowl and a flush tank on the bowl in which an overflow pipe discharges overflow water into the toilet bowl and conducts obnoxious air and gases and odors from the toilet bowl into an air space above the water level in the tank, a ventilator which fits over the open top of the flush tank and bottom of the ventilator casing being substantially in the same proportions as the usual lid for the flush tank and it

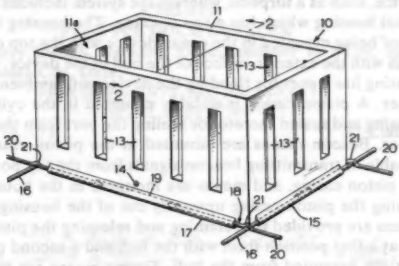
has an intake hole therethrough. A suitable blower or fan mounted on said bottom is located inside the casing. The walls of the casing are closed all around but are provided with charcoal filters for deodorizing and cleaning the air passing through the filters. The fan is driven by an electric motor from a suitable battery contained in the casing, and is controlled by a time switch so that the fan draws the air from the air space on the top of the tank and exhausts it through the filters. In a modified form a perforated hollow exhaust tube is placed either on the open top of the toilet bowl or on the toilet bowl cover with perforations in its inner periphery and is provided with a flexible connection into the casing of the ventilator capable of being set on the floor for directly drawing the air from the bowl and under the toilet seat into the casing and purifying it through the said filters. This separately located unit is also provided on one of its walls with compartments for magazines or the like.

3,763,506

INFLATABLE CRIB

Peter Szego, 7 Park Vista, Apt. 707, Toronto, 374 Ontario, Canada

Filed Mar. 2, 1971, Ser. No. 120,106
Claims priority, application Canada, Mar. 17, 1970, 12691
Int. Cl. A47d 7/00; A47c 29/00
U.S. Cl. 5—93 4 Claims



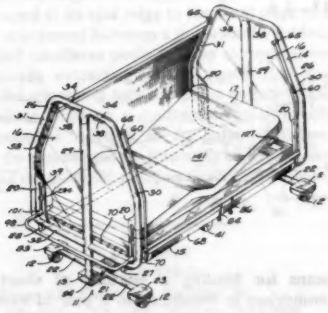
A collapsible crib for children, comprising a member inflatable to form a body having a floor and a circumscribing wall. The body is adapted to receive a plurality of rigid rods extending outwardly from the periphery of the body whereby the body is stabilized against overturning.

3,763,507

PEDIATRIC BED

Robert L. Propst, Ann Arbor, Mich., assignor to Herman Miller Inc., Zeeland, Mich.

Filed Aug. 27, 1971, Ser. No. 175,505
Int. Cl. A47c 27/08; A47d 9/00
U.S. Cl. 5—100 43 Claims



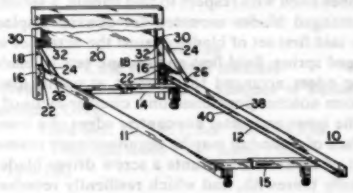
A bed platform is suspended within a support frame having transparent and removable plastic end walls and plastic mesh sides slidable on a Tambour track between raised and lowered positions. As the sides are raised, they slope inwardly over and above the platform to discourage climbing. The support frame is mounted on a caster supported base having upstanding end posts attached to the frame and adjustable height-wise by a motor driven lift. The platform is supported on the ends of the frame and is adjustable for Trendelenburg and reversed Trendelenburg positioning. Affixed to the platform is a mattress frame which includes adjustable and pivotal portions for Gatch positioning. The mattress is molded with a shell-like configuration to fit over the mattress and support frame and includes living hinges to permit folding into various Gatch positions. It also includes grippers along its underside for positive grip sheet placement.

3,763,508

BED FRAME WITH HEADBOARD SUPPORT BRACE

Sol Feldman, Philadelphia, Pa., assignor to Oxford Metal Products Co., Inc., Philadelphia, Pa.

Filed June 19, 1972, Ser. No. 264,054
Int. Cl. A47c 19/00
U.S. Cl. 5—131 6 Claims



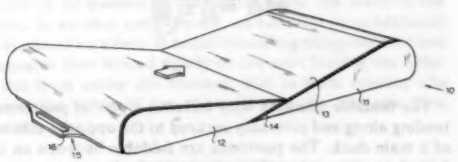
A metallic bed frame of the Hollywood type is constructed to provide a support for a headboard by means of a pair of pivoted angle braces of generally flat stock pivotally secured to the side rails of the bed frame and having an ear in a transverse plane for attachment to the headboard to provide a strut-like brace for the headboard.

3,763,509

ADJUSTABLE PILLOW APPARATUS

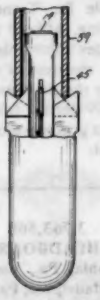
Theodor H. Mittendorf, R.R. 1 Box 102, Tavares, Fla.

Filed Nov. 17, 1972, Ser. No. 307,411
Int. Cl. A47g 9/00
U.S. Cl. 5—341 5 Claims



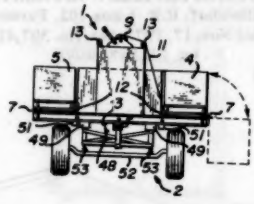
An adjustable pillow apparatus having telescoping pillow frame attached to a pair of pillow sections, with each pillow section being attached to one end of the pillow frame. The pillow sections have angled engaging surfaces for sliding on each other so that expanding and contracting the pillow frame will slide the pillow sections to adjust the shape of the pillow.

3,763,510
ELECTRICIANS TOOL
Joseph J. Graham, 1121 N.E. 35th St., Pompano Beach, Fla.
Filed Nov. 3, 1971, Ser. No. 195,189
Int. Cl. B25f *1/00*
U.S. Cl. 7—14.1 R 3 Claims



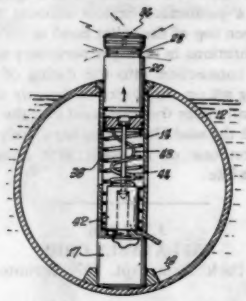
An electrician's tool for reaming the cut edges of tubular electrical conduit, including a handle, a set of radially arranged blades fixed with respect to said handle, a second set of radially arranged blades mounted for coaxial displacement relative to said first set of blades against the action of a coaxially arranged spring. Said first and second sets of blades having cutting edges arranged to intersect at points along said edges to form notches positioned on a circular locus of points, whereby the inner and outer concentric edges of a transversely cut surface of a conduit may be simultaneously reamed. The second set of blades also mounts a screw driver blade which moves axially therewith, and which resiliently recedes into a circular housing during use to permit said housing to surround the head of a screw and align the screwdriver blade with respect to said screw head, and prevent subsequent disengagement.

3,763,511
FOLDABLE AND TRAILERABLE PONTOON BOAT
Paul N. Sisil, Penn Valley, Calif., assignor to Harry E. Aine, Palo Alto, Calif.
Filed Feb. 5, 1971, Ser. No. 112,857
Int. Cl. B60f *3/00*; B63c *13/00*
U.S. Cl. 9—1 T 7 Claims



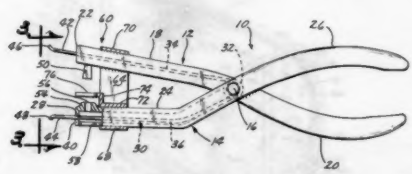
The foldable pontoon boat includes a pair of pontoons extending along and pivotably secured to the opposite side edges of a main deck. The pontoons are foldable between an inner folded position inboard of the main deck and an extended position below and outboard of the main deck. A pair of channel beams are detachably secured by bolts across the bow and stern of the boat. The main deck includes an engine well having a hinged engine cover. A winch, centrally disposed of the boat, winches the pontoons between the folded positions. The deck structure includes a retangular frame member with internal cross brace members sandwiched between a pair of plywood sheets on top and bottom sides of the deck.

3,763,512
BEACON RECOVERY SYSTEM
Stephen M. Valihora, West Covina, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Dec. 22, 1972, Ser. No. 317,873
Int. Cl. F42b *19/38*
U.S. Cl. 9—8 R 10 Claims



A beacon recovery system for a floatable hull type ocean device, such as a torpedo, wherein the system includes a cylindrical housing which has a top opening. The housing is capable of being mounted in the ocean device with the top opening flush with the exterior surface of the hull of the device, and the housing has a port for flooding the device with ambient ocean water. A piston casing is slidably mounted in the cylindrical housing and sealed thereto for sealing the port from the ocean water. Beacon means are mounted in the piston casing and capable of transmitting beacon signals from the top portion of the piston casing, and means are mounted in the housing for biasing the piston casing upwardly out of the housing. Latch means are provided for retaining and releasing the piston casing at a first position flush with the hull and a second position partially extended from the hull. Timing means are mounted in the housing for releasing the piston casing from the first position and activating the beacon means and then, after an interval of time, releasing the piston casing from the second position. In this manner, the beacon means is enabled to transmit beacon signals while the piston casing is partially extended and, after the interval of time, the piston casing is enabled for jettisoning so that the ocean device can be flooded through port and sunk.

3,763,513
METHOD AND MEANS FOR JOINING SHEET MEMBERS
Jerry A. Cooley, Route 1, New Virginia, Iowa
Filed July 22, 1971, Ser. No. 165,032
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 A 7 Claims



The means for binding a plurality of sheet members together comprises in combination a pair of elongated jaw members each having first and second ends and being pivotally joined for pivotal movement from a first position wherein the first ends are adjacent one another to a second position wherein the first ends are spaced from one another. A

punch is mounted on one of the jaw members adjacent the first end thereof and a die is carried on the other jaw member in registered alignment below the punch so as to receive the punch when the jaw members are in the second position. Each of the jaw members include a finger protruding from its end. An elongated binding ring is formed in an enclosed shape and has opposite ends overlapping one another. The binding ring is yieldably deformable to a spread position wherein the opposite ends thereof are spaced from one another, and the binding ring includes apertures therein for receiving the fingers. The apertures are positioned so that the fingers spread the opposite ends of the binding ring when the fingers are moved to their first position.

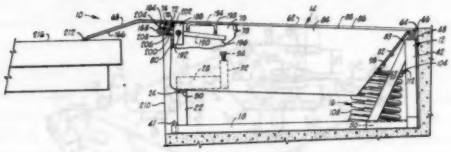
The method includes punching a hole through a stack of sheet members, inserting a pair of elongated fingers through the apertures in a resilient enclosed binding ring having opposite ends in overlapping relationship, moving the fingers away from one another so as to spread the opposite ends of the ring away from one another, aligning the opposite ends of the ring with the hole in the stack of sheet members, and moving the fingers toward one another so that the binding ring resumes its original configuration with the opposite ends thereof in overlapping relationship and extending through the hole in the stack of sheet members.

3,763,514

PIT-TYPE DOCK LEVELER

John Larry Bishop, Bethany, Okla., assignor to DLM, Inc., Oklahoma City, Okla.

Filed May 6, 1971, Ser. No. 140,857
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **21 Claims**



A dock leveler for installation in a pit formed in a loading dock to span the distance from the loading dock to the bed of a vehicle which is in proper position to be loaded or unloaded and more particularly, a dock leveler which includes a supporting frame mounted in the pit, a ramp member pivotally secured at its rear edge to the supporting frame, a lip member pivotally secured at its rear edge to the front edge of the ramp member for movement between a downwardly folded position to an extended cantilever position, a lip extending mechanism for automatically extending the lip member, a lip latching mechanism for releasably locking the lip member in a fully extended cantilever position, a mechanism for upwardly biasing the ramp member relative to the support frame, and a mechanism for automatically returning the ramp member to the supported cross-traffic position flush with the surrounding dock floor.

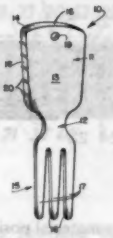
3,763,515

GOLF TOOL

Thomas E. Voss, 614 South St., Dundee, Ill.

Filed Mar. 22, 1972, Ser. No. 237,069
Int. Cl. A63b *57/00*
U.S. Cl. 15—105 **1 Claim**

A golf tool is integrally constructed of a single piece of metal and includes a body having a fork connected thereto, and a plurality of cleaning elements carried by the body and projecting therefrom and each being adapted to be received in a groove on the striking face of an associated golf club, the cleaning elements being equidistantly spaced apart in a



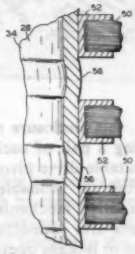
predetermined direction along the body with the distance between adjacent elements as measured in the predetermined direction being substantially equal to the distance between adjacent grooves on the associated golf club for accomodating simultaneous cleaning of a plurality of the golf club grooves.

3,763,516

CAR WASHING BRUSH

Jeff R. Welter, Vancouver, Wash., assignor to Daniel C. Hanna, Portland, Oreg.

Filed Oct. 15, 1971, Ser. No. 189,538
Int. Cl. A46b *7/10*; A46d *1/00*
U.S. Cl. 15—182 **3 Claims**



Bristle-holding channels spiralled around a hollow cylindrical core are held in spaced turns by peening the core to deform the portions of the core between the turns outwardly to create a rib portion positioned between the turns of the channel. In another embodiment, an adhesive in unhardened state is placed on a core in beads extending along the core and a channel is then wound tightly on the core forcing the adhesive out from under the channel, and to form spacing ribs between the turns of the channel, and the ribs are then hardened.

3,763,517

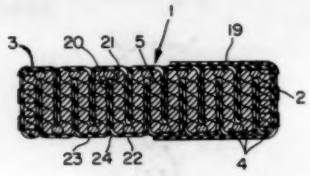
MOP SWAB AND METHOD OF PRODUCING THE SAME

Theron V. Moss, 3175 Falmouth Rd., Shaker Heights, Ohio

Continuation-in-part of Ser. No. 856,674, Sept. 10, 1969, abandoned. This application June 21, 1971, Ser. No. 155,024
Int. Cl. A47l *13/20*; B29h *9/04*
U.S. Cl. 15—229 R **14 Claims**

A mop swab which includes a plurality of absorbent mop

cords arranged in a plurality of vertically extending, parallel rows substantially centrally of the length of the swab and



secured together by strip material positioned between the adjacent rows of cords and adhered thereto.

3,763,518

WINDSHIELD WIPER APPARATUS

James D. Bellware, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1972, Ser. No. 244,684

Int. Cl. B60s *1/24*

U.S. Cl. 15—250.17 **3 Claims**

In a preferred form, this disclosure relates to a windshield wiping apparatus having a pair of oscillatable windingshield wipers, a pair of oscillatable drive pivots to which the wipers are drivingly connected, a yieldable support means for yieldably supporting a drive mechanism having a rotatable output shaft and a crank arm connected to the output shaft, and a drive transmission or linkage operatively connected with the crank arm and the drive pivots for oscillating the same to oscillate the wipers. The drive mechanism is operable to rotate the crank arm through a first orbit of a given radius during running operation and is operable to eccentrically move the rotatable output shaft to increase the throw of the crank arm to effect movement of the wipers from their inboard position toward a depressed park position when wiper operation is being terminated. The yieldable support means is operable to allow the crank arm to be held against rotation and the output shaft to be eccentrically shifted and trip a park switch upon the wipers encountering an obstruction which creates a back force in excess of a predetermined magnitude upon being moved from their inboard position toward their park position.

3,763,519

DOOR SPRING

Lucien Favre, Gland, Switzerland

Filed May 19, 1971, Ser. No. 144,842

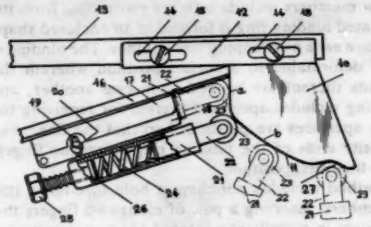
Claims priority, application Switzerland, Jan. 8, 1971, 299/71

Int. Cl. E05f *1/08*

U.S. Cl. 16—72 **3 Claims**

A device adapted to return a door to its closing position after it has been opened.

The device comprises a cam adapted to be fixed on the door and a casing adapted to be fixed on the frame of the door, the casing comprises a spring exerting a force on a roller which is



held in contact with the curve of the cam and means adapted to control the force of the roller on the cam, the cam and the casing being provided with means to adjustably mount them on the door and the frame.

3,763,520

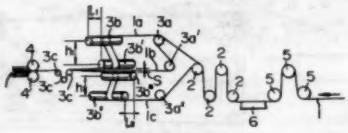
METHODS AND APPARATUS FOR TRANSFERRING TOWS

Nobuharo Izawa; Hiroshi Toyoshima, and Munetsugu Kikuyama, all of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sept. 2, 1971, Ser. No. 177,887

Int. Cl. B65h *5/12*; D01d *11/04*

U.S. Cl. 19—65 T **11 Claims**



The present invention relates to methods and apparatus for displacing the travelling path of tows in substantially parallel form in a process for advancing and transferring tows. Tow feed roller means and take-up roller means therefor are disposed in parallel and a plurality of guide cylinders are arranged therebetween, at least two of the guide cylinders being disposed in nonparallel relation with both the feed and take-up rollers such that distortions are not caused in the plane of the tows going around the rollers. The lengths of the tows travelling between the feed and take-up roller means are thus made substantially equal at any portion across the tows thereby preventing uneven tow tension in the advancing tows.

3,763,521

MANUFACTURE OF NON-WOVEN MATERIALS

Ronald Edmund Ricketts, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 21, 1970, Ser. No. 73,888

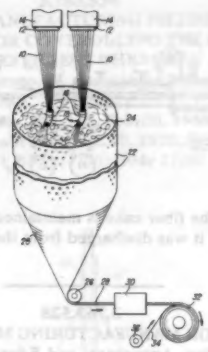
Claims priority, application Great Britain, Oct. 1, 1969, 48,196/69

Int. Cl. D01g *5/00*

U.S. Cl. 19—155 **6 Claims**

A method and apparatus for making uniform non-woven webs. The apparatus comprises a tubular collector, on to

which filaments are sprayed by two or more filament forwarding devices, with uniform relative angular motion between the forwarding devices and the collector surface. The filaments



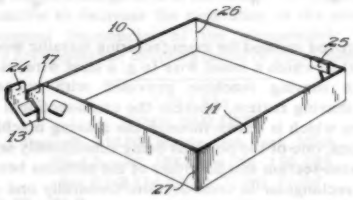
adhere to the collector and form a band of non-woven webs which is slowly advanced so that a tubular uniform non-woven web is produced. The web may be collected by flattening it to provide a double thickness or it may be slit along its length.

3,763,522

PRODUCT ENCIRCLING SLEEVE

Robert A. Krzyzanowski, Wauwatosa, Wis., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed July 25, 1972, Ser. No. 275,110
Int. Cl. B65d *63/00*
U.S. Cl. 24—17 B **9 Claims**



A product encircling sleeve is formed of two side-by side strips having projecting end portions which are foldably connected thereto, and which are foldably connected together. In forming the band, the two strips are folded into face contact and then expanded into rectangular relation along fold lines extending across the strips intermediate the ends thereof. The projecting end portions are folded against the strip, and a locking tongue on one projecting end portion at each end of the strips folds over the part of the strip against which the end portions are folded to engage between the strip and the enclosed product.

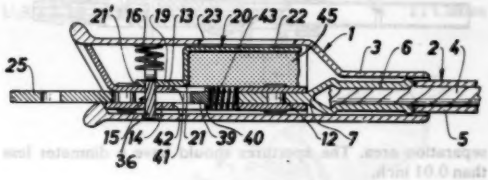
3,763,523

SAFETY BELT BUCKLE

Stig Martin Lindblad, Vargarda, 440 20 Sweden

Filed Dec. 6, 1971, Ser. No. 205,107
Claims priority, application Sweden, Dec. 4, 1970, 16434/70
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 AL **2 Claims**

A safety belt buckle having a coupling member connected to one part of the safety belt assembly and including a spring loaded locking member, a tongue is connected to another part of the belt assembly which tongue can be inserted in said coupling member raising said locking member until said locking member snaps into its locking position retaining said



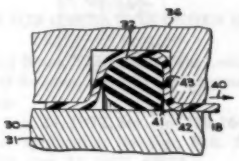
tongue and means are provided for raising said locking member to release said tongue to permit its withdrawing from said coupling member to separate the belt assembly when desired.

3,763,524

KEYING GRIP CLAMP FOR HOLDING A THIN FLEXIBLE ARTICLE

Donald C. Wilson, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed July 24, 1972, Ser. No. 274,154
Int. Cl. A44b *21/00*
U.S. Cl. 24—243 K **5 Claims**



Side edges of a flexible container are gripped near the unsealed container mouth by clamps to transversely tension the container and form a one-way valve at the container mouth which prevents entry of liquid into the container but permits the passage of gases from the container during cooking of a product within the container. The clamps hold the container's side edges firmly throughout a wide range of temperature variation and despite the presence of slippery substances that tend to lubricate the surface of the container. Each clamp comprises a pair of opposed jaws connected for relative movement between an open position where the jaws are spaced from each other and a closed position where the jaws are in abutment with each other. A keyway having a generally rectangular cross section is provided in one jaw and a cylindrical key formed of resilient material projects from the other jaw into the keyway to grip therebetween a side edge of the flexible container. The container edge is bent around the corners of the keyway and anchored within the keyway.

3,763,525

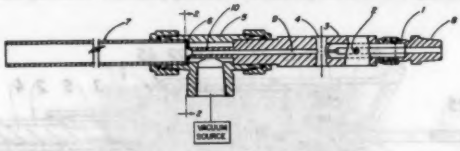
STEAM JET CRIMPING METHOD AND APPARATUS

James MacKnight Washington, Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,616
Int. Cl. D02g *1/20, 1/16*
U.S. Cl. 28—1.3 **11 Claims**

Improved steam jet crimping using a rearward exhaust of steam is achieved by use of a vacuum conduit with a screen

having myriad small apertures and an effective open area of at least 35 percent, preferably 45 percent at the steam-yarn



separation area. The apertures should have a diameter less than 0.01 inch.

3,763,526

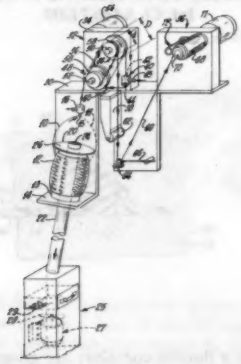
APPARATUS FOR CLEARING AND TEXTURING LINEAR MATERIAL

Gustav E. Benson, Edgewood, and Everett W. Taylor, Cumberland, both of R.I., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Division of Ser. No. 836,457, June 25, 1969, abandoned. This application July 26, 1971, Ser. No. 166,222

Int. Cl. D02g *1/16*

U.S. Cl. 28—1.4 2 Claims



Apparatus for clearing and texturing linear material including a package of the linear material wound on a tube, means for drawing air into the tube at one end thereof, means for withdrawing linear material from the outer surface of the package over the end of the tube into which air is drawn and an air nozzle spaced from the package for directing a stream of air generally towards the end of the package from which the material is withdrawn. The linear material is advanced through the air nozzle against the stream of air to remove undesired material therefrom prior to being textured; separated undesired matter is moved with air drawn into the tube for accumulation.

3,763,527

PROCESS FOR PRODUCING CRIMPED FIBERS BY CONTINUOUS WET HEAT SETTING AND APPARATUS THEREFOR

Masahide Yazawa, Tokyo, Japan, assignor to Polymer Processing Research Institute, Ltd., Tokyo, Japan

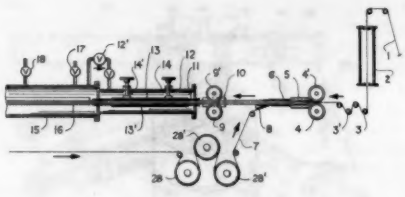
Filed Nov. 24, 1971, Ser. No. 201,944

Claims priority, application Japan, Nov. 25, 1970, 45/104328

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.6 15 Claims

A process and an apparatus for setting fiber crimps by wet heat in which a crimped fiber cake having a rectangular cross section, discharged from the exit opening of a stuffing crimper, is wrapped with at least one cloth belt, and passed through a high temperature pressurized steam chamber above



100°C, while the fiber cake is maintained in substantially the same shape as it was discharged from the crimper exit opening.

3,763,528

METHOD FOR MANUFACTURING METALLIC WOOL

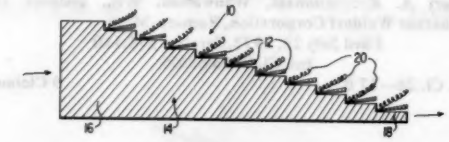
Henri Nieberding, Antwerpen, and Edgard Van Den Bergen, Deurne, both of Belgium, assignors to S. A. Bekaert-Cockerill, Hemisken, Belgium

Filed Feb. 22, 1971, Ser. No. 117,615

Claims priority, application Netherlands, Feb. 27, 1970, 7002881

Int. Cl. B23p *17/06*

U.S. Cl. 29—4.5 10 Claims



An improved method for manufacturing metallic wool (e.g. steel wool) in which a metal wire (e.g. a steel wire) is drawn through a shaving machine provided with successively mounted shaving cutters, wherein the cross-sectional profile of the wire which is drawn through the shaving machine has two portions, one of the portions being substantially semi-circular in cross-section and the other of the portions being substantially rectangular in cross-section. Generally one dimension of the rectangular portion is substantially equal to the diameter of the semi-circular portion and the other dimension of the rectangular portion is in the range of about one-third to two-thirds of the diameter. Preferably this other dimension of the rectangular portion is substantially equal to the radius of the semi-circular portion. An improved metallic wool product is produced by the method of the present invention.

3,763,529

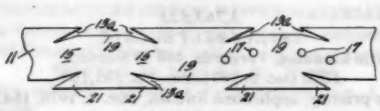
METHOD OF FABRICATING BARBED TAPE

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md.

Filed Feb. 10, 1972, Ser. No. 225,328

Int. Cl. B21f *25/00*

U.S. Cl. 29—7.1 8 Claims



A process for manufacturing barbed tape from strip without scrap loss. The first step in manufacture is slitting the edges of

the strip to form points. The points are uncovered either by elongating the tape or by bending portions of the edges of the tape.

3,763,530

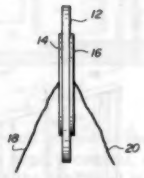
METHOD OF MANUFACTURING PIEZOELECTRIC RESONATORS FOR CONTROLLING THE COUPLING COEFFICIENT THEREOF

Ralph K. Helfen, Chicago, Ill., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Division of Ser. No. 801,118, Feb. 20, 1969, Pat. No. 3,584,245. This application Dec. 10, 1970, Ser. No. 97,014

Int. Cl. B01j *17/00*; **H04r** *17/00*

U.S. Cl. 29—25.35 **3 Claims**



Only part of the center of a ceramic body, such as a circular disc, is subjected to a polarizing voltage. In the case of a radial mode resonator this poled area may be a circular area in the center of the major faces of the resonator. This polling is accomplished by using temporary electrodes, which may or may not become part of the final electrode structure. After the element has been thus poled, a new or added electrode is applied to the resonator. This electrode is greater in area than the area of the poling electrode, and can be placed immediately over the poling electrodes, while still making electrical contact to the adjacent area of the ceramic body, or to the poling electrode, which in turn is in contact to the ceramic. By controlling the percentage area of the final electrode that is poled it is possible to decrease the separation of the resonant and anti-resonant frequencies of the piezoelectric resonator, thereby decreasing the coupling factor of the element.

3,763,531

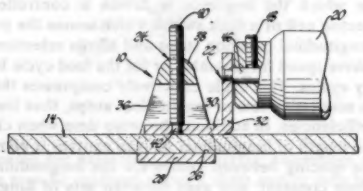
TOOL HOLDER

Joseph J. Dancsik, 23550 Oneida, Oak Park, Mich.

Filed June 7, 1971, Ser. No. 150,489

Int. Cl. B23d *67/00, 71/00, 71/04*

U.S. Cl. 29—80 R **7 Claims**



A tool holder assembly of the type for attachment to a powered device having a handle portion into which rotating motion is inserted and a tool support neck extending laterally therefrom and which includes a reciprocating connector for reciprocating the tool holder. The tool holder is adapted to clamp an elongated tool, the inward end of which may be disposed anywhere between the tool holder and a position adjacent the handle portion of the powered device. The tool holder includes an L shaped member with a cradle movably supported on the L shaped member by an adjustment means which moves the bottom of the cradle toward and away from the bottom of the L shaped member for clamping a tool therebetween.

3,763,532

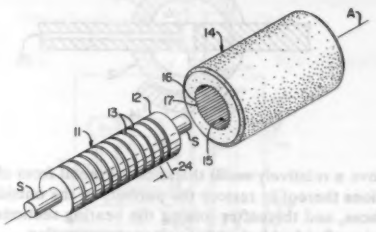
DRAFTING ROLLER CONSTRUCTION

Kenneth C. Smith, Westhoughton near Bolton, England, assignor to Dayco Corporation, Dayton, Ohio

Filed June 5, 1972, Ser. No. 259,647

Int. Cl. B21b *31/08*

U.S. Cl. 29—129 **11 Claims**



An improved drafting roller construction for drafting textile fibers and comprising an elongated supporting roller having an outside cylindrical surface and spaced annular grooves extending inwardly from the outside surface and a sleeve-like cot having an inside surface defined by a plurality of alternating channels and projections extending substantially along its full length with adhesive means between the inside and outside surfaces fixing the cot and roller together in a high-strength manner.

3,763,533

ROLLER FOR OPERATION UNDER HIGH TEMPERATURES

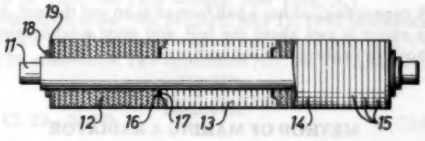
Ingvar Gustav Axel Blom, Viken, and Paul Lennart Ivarsson, Hoganas, both of Sweden, assignors to Hoganas Aktiebolag, Hoganas, Sweden

Filed Jan. 24, 1972, Ser. No. 220,164

Claims priority, application Sweden, Feb. 5, 1971, 1493; July 29, 1971, 9773; Oct. 12, 1971, 12915

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **3 Claims**



A roller for operation at a high temperature, for example in a sheet glass making apparatus, comprises a steel shaft and a cylindrical shell on said shaft. The shell consists of fibres of a glassy material, such as basalt, and an inorganic high temperature resistant binder such as silica.

3,763,534

FABRICATION PROCESS FOR POROUS METAL BEARINGS

Thomas Francis Conroy, Latham, and Carl Gustave Ringwall, Scotia, both of N.Y., assignors to General Electric Company, New York, N.Y.

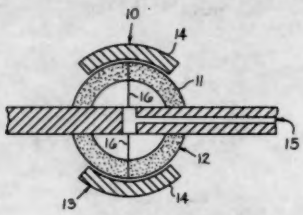
Filed May 30, 1972, Ser. No. 258,034

Int. Cl. B23p *11/00*; **B21d** *53/10*

U.S. Cl. 29—148.4 B **12 Claims**

A process for fabricating porous metal bearings comprising the steps of rough forming from blanks of porous material a

pair of bearing sections with surfaces each having a substantially semi-bearing configuration, performing by mechanical means a precision machining operation on these surfaces, then chemically machining the bearing surfaces to uniformly



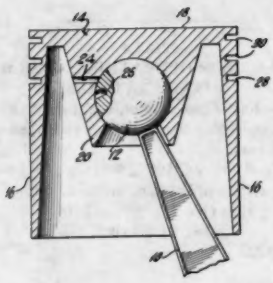
remove a relatively small thickness of metal from all exterior portions thereof to restore the porosity of the outside bearing surfaces, and thereafter joining the bearing sections together to form a finished bearing of unitary construction.

3,763,535

METHOD OF MAKING A BALL JOINT LINKAGE

Peter Christopher John Gallagher, Hightstown, N.J., assignor to NL Industries, Inc., New York, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,174
Int. Cl. B23p *11/00*
U.S. Cl. 29—149.5 B **9 Claims**



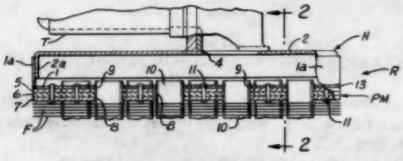
A connecting rod has a ball formed at an end thereof. A unitary piston is cast about the ball, and upon solidification, irremovably captures the ball within the piston body.

3,763,536

METHOD OF MAKING A RADIATOR

Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Division of Ser. No. 127,617, March 24, 1972, Pat. No. 3,710,858. This application Sept. 18, 1972, Ser. No. 289,797
Int. Cl. B21d *53/02*; B23p *15/26*
U.S. Cl. 29—157.3 B **3 Claims**



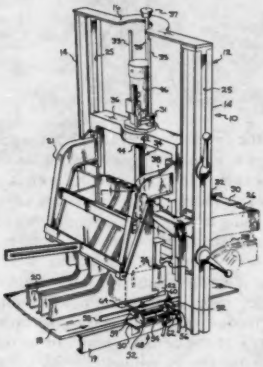
A method of making a radiator having a fluid header with a plurality of holes in one of its walls, plate means, comprised of any number of plates, parallel with and abutting against the wall. The plate means also has holes aligned with the holes in the header and tubes extend both through the plate means and through the header wall, the tubes being soldered, brazed or otherwise secured to the header to form a leakproof joint therewith. The wall, the plate means, and the tubes are all soldered, brazed or otherwise bonded or fused together.

3,763,537

APPARATUS AND METHOD FOR CONTROLLING A MACHINE FOR ASSEMBLING CELL-TYPE CARTON FILLERS

Frank J. DiFrank, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed June 2, 1972, Ser. No. 258,981
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 A **9 Claims**



Apparatus for improving the efficiency of a corrugated partition assembly machine. In a typical corrugated partition assembly machine, longitudinal partition strips are carried by a conveyor to an assembly station where transverse partition strips are inserted in slots in the longitudinal strips to form a cell-type partition assembly. The present invention utilizes a selectively engageable multiple speed drive system to drive the conveyor at the proper speed for assembly when there are longitudinal strips present at the assembly station and at a much faster speed between sets of longitudinal partition strips. The speed at which the conveyor is driven is controlled by a photoelectric cell or a limit switch which senses the presence of the longitudinal partition strips and allows selection of the proper drive speed for assembly or for the feed cycle between assembly cycles. This cycle effectively compresses the space between successive sets of longitudinal strips, thus leading to higher efficiencies. In addition, the setup time when changing from one length of longitudinal strip to another is eliminated, since the spacing between guides for the longitudinal strips can remain constant, any gaps between sets of longitudinal strips being compensated for by the cycling of the multiple speed drive system.

3,763,538

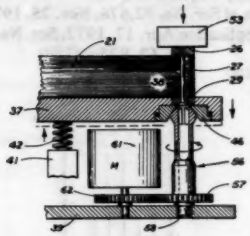
TOOL FOR CUTTING AND HEADING PLASTIC STUDS

Heiko T. De Man, Alameda, Calif., assignor to Velo-Bind, Inc., Mountain View, Calif.

Division of Ser. No. 114,557, Feb. 11, 1971, Pat. No. 3,689,185. This application July 12, 1972, Ser. No. 271,021
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **2 Claims**

To cut and form heads on a plastic stud or rod, particularly in binding papers together, a rotating tool of special construc-

tion is forced against a conical concave cam surface. The tool has a hollow shank with at least one flexible arm extending therefrom, said arm formed with a head, the arm being normally outwardly slanted so that the head is spaced outward of the axis of rotation. Each head has an inward projecting blade at its distal end. The space between the axis and the inner edge of the blade in normal position is sufficient to permit longitu-



dinal movement of the stud inward of the head. The exterior of the distal end of the head is conical, convex and complementary to the cam. As the tool head is brought toward the cam, the head is forced inward causing the blade to sever the stud. Simultaneously the distal end of the head as it spins splays the severed end of the stud, forming a rivet head, which holds the papers in place. In a preferred embodiment there are two cooperating heads on the tool.

3,763,539

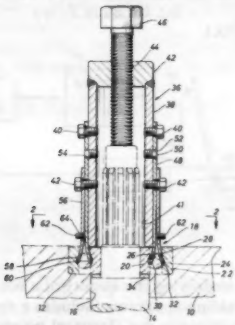
APPARATUS FOR EXTRACTING BALL BEARINGS

Jerry S. Dodd, Rt. No. 1, Brashear, Tex.

Filed Feb. 14, 1972, Ser. No. 225,844

Int. Cl. B23p *19/04*

U.S. Cl. 29—201 **17 Claims**



Apparatus for extracting ball bearing assemblies and the like that may be received about a shaft and/or may be press-fitted within a bearing recess in such manner that extraction thereof may be very difficult. A bearing extractor, having a plurality of pairs of extracting fingers carried thereby, may be brought into engagement with a ball bearing in such manner that the pairs of expandable finger assemblies may be inserted into an annular groove in the bearing assembly defined by spaced inner and outer bearing races. The extracting finger assemblies then may be spread or expanded mechanically to tightly engage one or both of the inner and outer races of the bearing. A threaded force applying member, retained by the housing of the bearing extractor, may then be manipulated to apply linear force between the extractor housing and the structure retaining the bearing, thereby extracting the bearing from the bearing retaining structure.

3,763,540

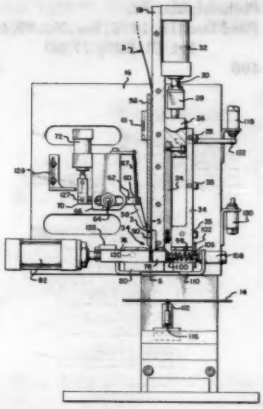
APPARATUS FOR INSERTING ELECTRICAL TERMINALS INTO PRINTED CIRCUIT BOARDS

Alden Owen Long, Jr., Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 14, 1971, Ser. No. 207,803

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **5 Claims**



Apparatus for inserting terminals into printed circuit boards comprises reciprocable ram and transfer slide means which transfers an individual terminal from the end of a feed path to a position in alignment with the path of reciprocation of the ram. The transfer slide is formed of two sections which are resiliently biased against each other. At the loading station, an individual terminal is inserted into the transfer slide between the two sections and resiliently held while it is carried to the insertion station. Thereafter, the ram moves through an opening in the transfer slide, grasps the terminal, and carries it towards the printed circuit board into which it is inserted.

3,763,541

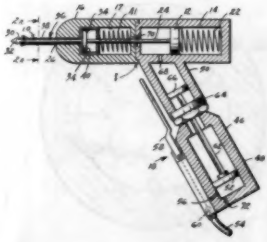
METHOD OF AND APPARATUS FOR SETTING BLIND FASTENERS

David M. Jaffe, 360 First Avenue, New York, N.Y.

Continuation of Ser. No. 142,826, May 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 62,873, Aug. 11, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,789

Int. Cl. B23q *7/10*; B23p *11/00*

U.S. Cl. 29—212 D **26 Claims**



Apparatus for setting fasteners having apertures therein, which comprises a mandrel mounted for movement relative to an anvil surface, said mandrel being adapted to receive a fastener thereon by effecting relative axial movement between the mandrel and the aperture in the fastener, means for ex-

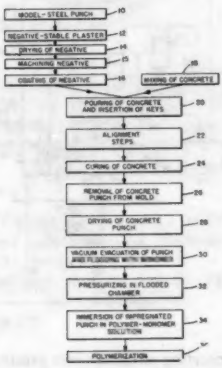
panding a portion of the mandrel in front of the fastener to a cross-section greater than the aperture in the fastener, and means for driving the expanded mandrel toward the anvil surface to set the fastener.

3,763,542

SHORT RUN PRODUCTION TOOL

Ludwik Gutnajer, Carversville, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 18, 1970, Ser. No. 99,401
Int. Cl. B23p *17/00*
U.S. Cl. 29—400 4 Claims



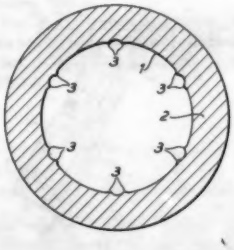
A method of forming a polymer impregnated concrete tool, such as a punch, includes the steps of pouring the concrete in a negative casting. Steps are taken while the concrete is still soft to assure that the tool attachments are properly aligned. The concrete is then cured and monomer is added under pressure. The impregnated tool is then put in a polymer monomer solution and polymerized.

3,763,543

METHOD OF PROVIDING THE CYLINDRICAL INNER SURFACE OF A LENS MOUNT WITH ROLLS AND LENS MOUNT PROVIDED THEREWITH

Ernst Strauch, Naunheim, and Gerhard Bleier, Atzbach, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Dec. 13, 1971, Ser. No. 207,038
Claims priority, application Germany, Dec. 15, 1970, P 20 61 661.9
Int. Cl. B23q *17/00*
U.S. Cl. 29—406 1 Claim



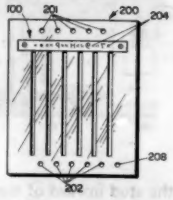
Into the inner surface of a cylindrical lens mount grooves are pressed by means of a roller member so that the material on either side of the groove folds from the general level of the surface into the interior space and form rolls. The diameter between the rolls is then sized to the exact size and the lenses, lens elements and pre-mounted lenses are supported on the rolls.

3,763,544

METHOD OF MANUFACTURING TYPE FINGERS

Archibald M. Gibson, Jr., Erie, Pa., assignor to General Electric Company, Waynesboro, Va.

Continuation of Ser. No. 92,676, Nov. 25, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,918
Int. Cl. B23q *17/00*
U.S. Cl. 29—407 13 Claims



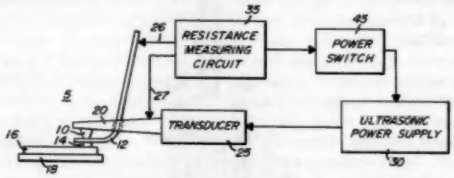
High precision type fingers are produced from a character bar containing raised type faces for a plurality of characters, and a precision punched sheet metal coupon blank. The method comprises forging of the character bar, punching of the coupon blank, welding and brazing the two elements together, and then punching out a plurality of type fingers from each assembly.

3,763,545

METHOD FOR CONTROL OF WELDING APPARATUS

Keith G. Spanjer, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 240,442, April 3, 1972, Pat. No. 3,734,382. This application Jan. 26, 1973, Ser. No. 326,719
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 4 Claims



A system for improving the quality of a bond obtained from an ultrasonic welding apparatus includes a resistance measuring circuit for monitoring the electrical resistance between the wire to be bonded and the bonding head. The welding apparatus is automatically de-activated upon an increase in said resistance, the increase being indicative of bond formation. De-activating the bonding apparatus immediately following bond formation prevents the application of further ultrasonic energy from weakening the bond.

3,763,546

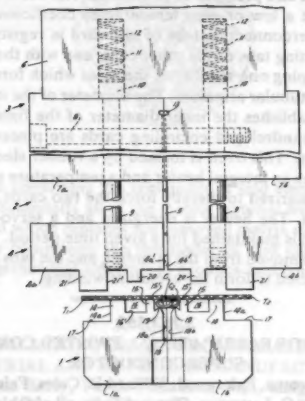
METHOD AND APPARATUS FOR PRODUCING GAPS IN SLIDE FASTENER CHAINS

Morris Perlman, Brooklyn, N.Y., assignor to Carbide Form Grinding, Inc., Brooklyn, N.Y.

Filed Jan. 27, 1972, Ser. No. 221,187
Int. Cl. B23p *11/00*, *19/04*
U.S. Cl. 29—408 17 Claims

A method and apparatus for producing a gap in a slide fastener chain having a pair of tapes carrying along adjacent

inner longitudinal edges thereof continues coils attached to the tapes and having interengaged coupling portions, in which the coils are attached to the tape so that the coils are covered at one side thereof by the tapes. The tapes are clamped at the desired location of the gap in the region of outer longitudinal edges thereof and then deflected in direction transverse to the plane in which they are located between the clamped positions



thereof and the coils connected thereto to thereby pull the inner longitudinal edges apart and to thus expose interengaged coupling portions of the coils, whereafter the coils are cut between the pulled apart inner edges of the tapes. The cut coils are then removed from the tapes by pulling the cut coils out of the threads by means of which they are connected to the tapes.

3,763,547

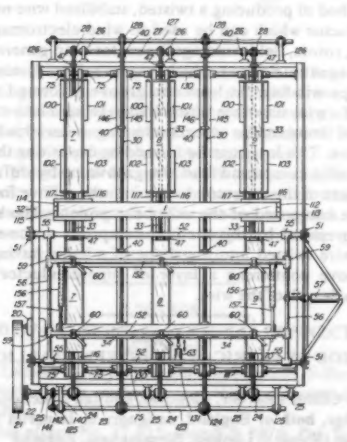
AUTOMATIC FASTENING MACHINE

Daniel Leo Blakeslee, Wilkes Barre, Pa., assignor to Stacor Corporation, Newark, N.J.

Continuation-in-part of Ser. No. 109,769, Jan. 26, 1971, Pat. No. 3,681,842. This application Apr. 26, 1972, Ser. No. 247,524

Int. Cl. B23p *19/00*; B23q *7/10*

U.S. Cl. 29—430 **15 Claims**



A method and machine for automatically assembling members into a frame and placing fasteners such as nails, staples or the like in a predetermined location includes means to collect the frame members into an assembly, means to move the assembly to be fastened to a work station where it is positioned against retractable stops, and means to position and drive a plurality of fasteners in a first location and to reposition and drive fasteners in at least one other location.

3,763,548

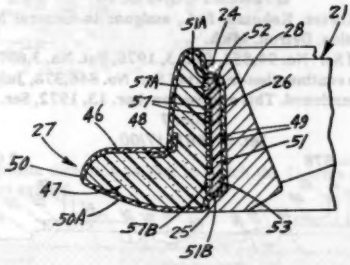
METHOD OF MOUNTING A ROTATABLE SUTURING MEMBER ON A DEVICE

Lawrence Anderson, 5200 W. 78th St., Minneapolis, Minn.

Filed Mar. 17, 1972, Ser. No. 235,502

Int. Cl. B23p *9/00*

U.S. Cl. 29—445 **17 Claims**



A suturing member and method of mounting the suturing member on an implantable device, as a heart valve. The suturing member has a porous fabric cover surrounding a semi-rigid plastic core. An annular sleeve of heat shrinkable plastic material is located within the cover to hold the cover in assembled relation with the device in a manner which allows for rotation of the device after the suturing member has been attached to the tissue. In the method of mounting the suturing member on the device, the suturing member is shaped and cured on the device with the use of a mold. The mold is heated to cure the plastic core of the suturing member and bond the core to the inner surface of the cover.

3,763,549

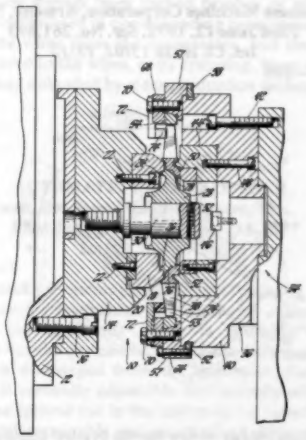
METHOD OF FRICTION WELDING WITH FLOATING WORKPIECE FIXTURE

Gerald D. Bonneville, Orchard Lake; Adolf Hetke, Livonia, and William N. Free, Dearborn, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 93,140, Nov. 27, 1970, Pat. No. 3,702,169. This application Aug. 24, 1972, Ser. No. 283,545

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 **5 Claims**



This friction welding method employs a floating shroud in

the tail stock of the welder that provides radial support of a workpiece having thin or fragile portions. There is limited shroud rotation relative to the tail stock during the welding process so that torsional forces generated during friction welding will not be transmitted from the workpieces through the shroud to the tail stock. This allows the workpieces to be joined without destruction or damage by the friction welding process. The shroud has a plurality of segments facilitating easy removal of the workpieces from the tail stock.

3,763,550

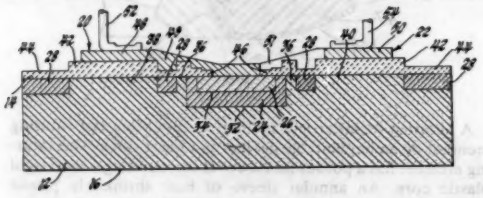
GEOMETRY FOR A PNP SILICON TRANSISTOR WITH OVERLAY CONTACTS

James A. Oakes, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 94,854, Dec. 3, 1970, Pat. No. 3,697,828, which is a continuation-in-part of Ser. No. 846,378, July 31, 1969, abandoned. This application Apr. 13, 1972, Ser. No. 243,667

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **2 Claims**



A semiconductor device having an expanded guard ring overlying substantially the entire surface of a region except for at least one island therein. A relatively thin protective coating overlies the guard ring and a relatively thick protective coating overlies the island. A terminal connector contact for a wire-bonded or flip-chip device is formed on the relatively thick island portion of the protective coating, which is more suitable for withstanding bonding pressure. One form of this device includes a PNP transistor having an expanded P+ guard ring overlying a substantial portion of the collector surface noncontiguously closely surrounding the base region of the transistor. Islands of original P-type material having a relatively thick oxide coating thereon are left within the expanded P+ guard ring to support wire-bonding or flip-chip contact pads.

3,763,551

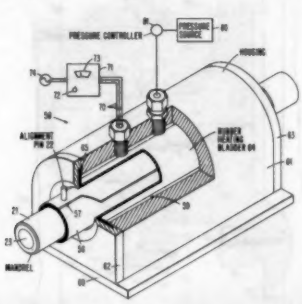
METHOD OF MANUFACTURING A TUBULAR PRINTED CIRCUIT ARMATURE

Christopher C. Herron, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1972, Ser. No. 261,893

Int. Cl. H02k *15/02, 15/10*

U.S. Cl. 29—598 **12 Claims**



Tubular high torque — low inertia printed circuit armatures are manufactured from two flexible circuit cards. Each card is comprised of a layer of conductive metal laminated to a layer of insulation. The layer of insulation is patterned to expose a pair of spaced parallel bands of metal, on the insulation side of each card. These spaced bands form the circuit interconnecting tabs of the metal winding conductors which extend into the spaced bands. The abutting surfaces of the two cards are coated with an adhesive which will bond the cards together under a heat and pressure environment. The cards are loosely rolled about a low or zero temperature coefficient mandrel, with the interconnecting tabs of one card in registry with the interconnecting tabs of the other card, and with the cards axially overlapping one another at the sides which form the axial seam of the tubular armature. The diameter of the mandrel accurately establishes the inner diameter of the finished armature. The mandrel and encircling cards are placed in an inflatable oven. This oven is formed by a rubber sleeve or tube which carries an integral heater and a temperature sensor. The oven is pressurized to thereby force the two cards down onto the mandrel. The heater is energized and a servo-controlled temperature is maintained for a given time period. The resulting tube is removed from the mandrel, and the tabs are electrically connected to form the armature winding.

3,763,552

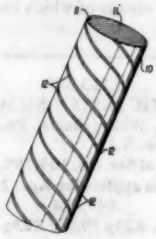
METHOD OF FABRICATING A TWISTED COMPOSITE SUPERCONDUCTOR

Gerald V. Brown, Lakewood; Willard D. Coles, Fairview Park, and James C. Laurence, Olmsted Falls, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 16, 1972, Ser. No. 235,266

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **10 Claims**



A method of producing a twisted, stabilized wire or tube superconductor which can be used to wind electromagnets, armatures, rotors, field windings for motors and generators, and other magnetic devices which use a solenoid, toroidal, or other type winding. At least one groove is formed along the length of a wire substrate which is then twisted into a helix and a layer of intermetallic superconducting material is formed in the groove. This layer can be formed by depositing the desired intermetallic compound into the groove or by diffusing one component of the superconductor into the groove formed in a substrate composed of the other component. The superconductor prepared by this method comprises a non-superconductor wire twisted into the shape of a helix, having at least one groove containing a layer of superconductor material along the length of the wire.

3,763,553

METHOD OF FABRICATING INTERMETALLIC TYPE SUPERCONDUCTORS

Anthony Clifford Barber, Lichfield, and Ian Leitch McDougall, Aldridge, both of England, assignors to Imperial Metal Industries (Kynock) Limited, Birmingham, England

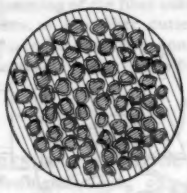
Filed Sept. 26, 1972, Ser. No. 292,272

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **16 Claims**

A method of manufacturing a superconductor which contains a superconductive intermetallic compound of at least

two elements, includes the steps of producing a composite precursor having at least one filament which contain at least one of said elements and is embedded in and supported by a ductile metal matrix material, passing the precursor into a



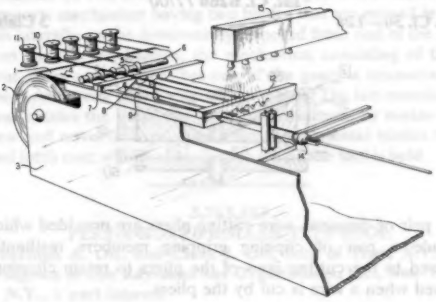
molten bath containing the remainder of said elements which removes substantially all of the matrix material from said filament(s) and which replaces the removed matrix material with a substance comprising the remainder of said elements, and reacting together said elements to produce said compound.

3,763,554

WIRE INSULATION FORMED FROM PLEATED SHEET MATERIAL AND METHOD OF MANUFACTURE

John Thomas Early, North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1971, Ser. No. 208,126
Int. Cl. H01b *13/00*
U.S. Cl. 29—624 **11 Claims**



This disclosure describes process and apparatus for continuous insulating of wires in which sheet material drawn from a roll is pleated and the wires are introduced into the pleats. The pleat envelopes are severed and each assembly of wire and pleat is closed and polished. Advantageously, the sheet material is preselected for specific dielectric and structural characteristics. The sheets may also be precoated with adhesive, and also pre-color coded. The process is capable of high speed operation and produces a highly reliable product without creating air or water pollutants.

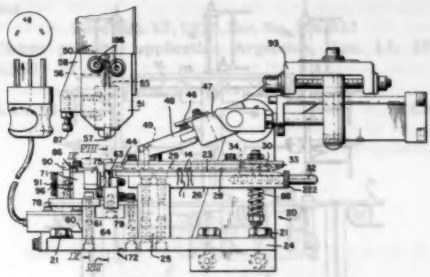
3,763,555

METHOD OF CRIMPING ELECTRICAL CONNECTORS TO WIRES

Lodevicus Lambertus Johannes Van de Kerkhof, S-Hertogenbosch, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 17,411, March 9, 1970, Pat. No. 3,628,228. This application Sept. 17, 1971, Ser. No. 181,460
Int. Cl. H01r
U.S. Cl. 29—628 **1 Claim**

A method of and apparatus for crimping a ferrule part of an electrical connector to a wire end is disclosed for use with connectors wherein a portion of the contact part of the connector extends beyond the base of the U-section ferrule part in



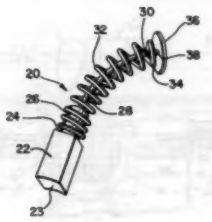
the opposite direction to that in which the U-arms of the ferrule part extend.

3,763,556

METHOD AND APPARATUS FOR MANUFACTURING ARTICLES SUCH AS CARBON BRUSH ASSEMBLIES

John H. Respess, Dunn, N.C., assignor to Morganite Incorporated, Dunn, N.C.

Filed Dec. 27, 1971, Ser. No. 212,109
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 **49 Claims**



In order to attach terminals to the ends of wires extending through helical springs from carbon brushes or the like, the springs are compressed in corresponding receptacles of a rack to project the wires from the receptacles, and the terminals are then secured to the wires, as by crimping. Parts are loaded, assembled, and unloaded by mass production techniques.

3,763,557

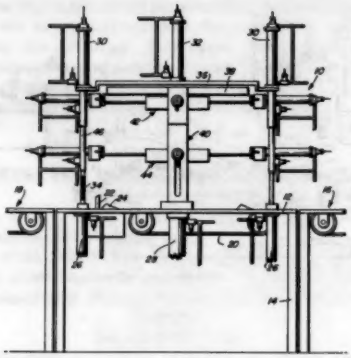
AUTOMATIC CARTON OPENER

Cyrus G. Sewell, 606 Josephine, Sweetwater, Tex.

Filed Jan. 4, 1972, Ser. No. 215,337
Int. Cl. B67b *7/38*
U.S. Cl. 30—2 **9 Claims**

An apparatus for opening cartons incorporating a supporting and conveying mechanism for conveying cartons sequentially into the apparatus where a plurality of cutter mechanisms cut the peripheral wall of the carton after which the carton is discharged from the apparatus. Each cutting mechanism is vertically adjustable and laterally adjustable to enable the peripheral cut in the carton to be varied vertically and horizontally to enable various standard size cartons to be opened and to enable the peripheral cut line or cut lines to be

varied in relation to the vertical dimension of the carton. Each cutting mechanism also includes a structure to limit the depth



of penetration of the cutting mechanism to eliminate the possibility of damage to merchandise in the carton.

3,763,558

ELECTRIC SHAVER WITH CONCEALABLE LONG HAIR TRIMMER

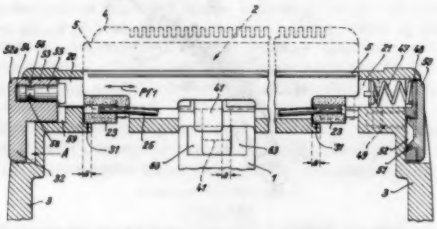
Kurt Bauerle, Schramberg-Sulgen, Germany, assignor to Firma Kuno Moser GmbH, Unterkirnach, Germany

Filed July 19, 1971, Ser. No. 163,735

Claims priority, application Germany, July 20, 1970, P 20 35 870.7

Int. Cl. B26b *19/20*

U.S. Cl. 30—34.1 **18 Claims**



An electric shaver with an elongated long hair trimmer which is adjacent to one exposed longitudinal edge of the shear foil and is pivotable with reference to the head frame of the shaver between a concealed and an exposed or operative position. The movable clipping element of the trimmer is automatically coupled to the drive for the cutter which cooperates with the shear foil when the trimmer is pivoted to its exposed position. The trimmer is pivotable along an axis which is parallel to the adjacent exposed longitudinal edge of the shear foil. A spring propels the trimmer to the exposed position in response to actuation of a knob which disengages a latch serving to normally hold the trimmer in the concealed position in which the trimmer does not interfere with access to the adjacent portion of the shear foil.

3,763,559

PIPE CUTTING APPARATUS

Erik Lennart Axbjer, Bultvagen 22, Hagersten, Sweden

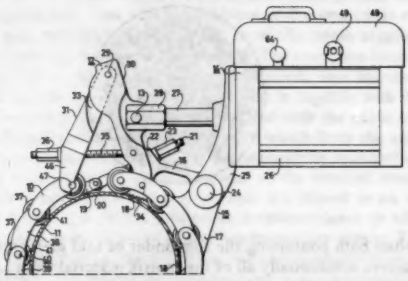
Filed Jan. 14, 1972, Ser. No. 217,882

Claims priority, application Sweden, Jan. 20, 1971, 642/71

Int. Cl. B23d *21/06*

U.S. Cl. 30—100 **4 Claims**

An improvement in pipe cutting apparatus of the type having a number of cutting elements mounted for rotation on pins which also pivotally connect together the links of a roller type chain, means for tightening the chain around the pipe during a pipe cutting operation, and means for moving the chain around the pipe. The improvement resides in the fact that the



chain tightening means is provided with parts which present co-acting guide surfaces adapted to align the ends of the chain length with respect to each other. Further, means are provided for adjusting the distance between the side links of each chain link and for locking the side links in the adjusted position.

3,763,560

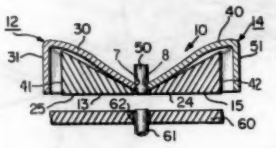
CUTTING PLIERS

Egon J. V. Makkay, New Brunswick, and John J. Pesce, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 126,796, March 22, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 323,022

Int. Cl. B26b *17/00*

U.S. Cl. 30—124 **3 Claims**



A pair of diagonal, wire cutting pliers are provided which include a pair of clipping gripping members resiliently secured to the cutting jaws of the pliers to retain clippings formed when a wire is cut by the pliers.

3,763,561

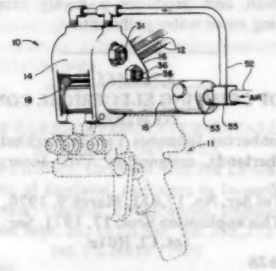
FIBER CUTTER

James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corporation, Indianapolis, Ind.

Filed Feb. 22, 1972, Ser. No. 228,013

Int. Cl. B26b *27/00*

U.S. Cl. 30—128 **10 Claims**



A self-adjusting fiber cutter for cutting lengths of fibers such as glass roving and the like into short lengths. The cutter sec-

tion of the fiber cutter includes fluidic means for biasing roller means of the cutter section into engagement with another roller means of the cutter section to thereby compensate for wear experienced by the fiber cutter and to facilitate loading and unloading of fibers. The fiber cutter has a low start-up torque to minimize jamming of the fiber cutter at start-up. The pressure roller means of the fiber cutter is eccentrically mounted to compensate for possible inconsistencies in fabrication tolerances between several of the roller means of the fiber cutter.

3,763,562

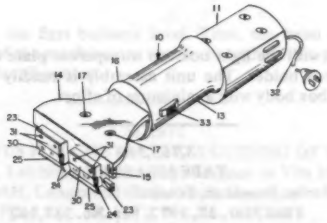
RESURFACING TOOL

Robert C. Schultz, Newington, Conn.

Filed Feb. 15, 1972, Ser. No. 226,585

Int. Cl. B23d 49/16

U.S. Cl. 30—166 **3 Claims**



This invention consists of an electric motor or its equivalent mounted on one end of a tubular hand grip whose other end supports mechanism having two blades that are moved in and out laterally on the downwardly disposed front end of the support for this mechanism, the mechanism consisting of three spur gears so arranged that one of the gears is connected to the forward end of the shaft of the motor. The last-mentioned gear rotates the other two gears which in turn, by means of a new and novel linkage, moves the two aforesaid blades back and forth over whatever surface to which the tool is held.

3,763,563

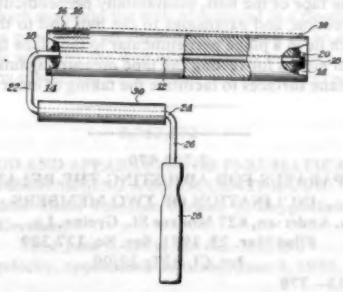
PERF-A-BOARD ROLLER TYPE TOOL

Thurman A. Ott, and Clara J. Ott, both of Troy, N.Y., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 11, 1972, Ser. No. 243,010

Int. Cl. B26f 1/32

U.S. Cl. 30—365 **1 Claim**



An elongated roller with an outer cylindrical surface having many sharp points equidistantly spaced extending outward from said surface at right angles thereto. A handle secured to the roller enables the roller to be rolled over a suitable surface to place small indentations therein.

3,763,564

ANTERIOR VESTIBULAR FILM FOR DENTAL USE

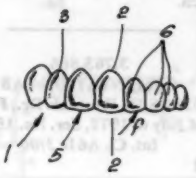
Juan Carlos Petrelli, and Sanzio Soldan, both of Buenos Aires, Argentina, assignors to Dentax S.A., Buenos Aires, Argentina

Filed Jan. 13, 1971, Ser. No. 106,012

Claims priority, application Argentina, Jan. 13, 1970, 226,355

Int. Cl. A61c 13/00

U.S. Cl. 32—2 **1 Claim**



An attachment for a user's teeth in the form of a film which can be attached to and mates with said teeth and gives an outward appearance of a correct set of teeth.

3,763,565

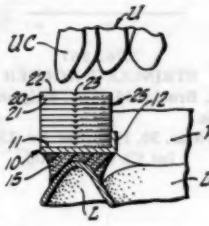
METHOD AND APPARATUS FOR ESTABLISHING PROPER INTEROCCLUSAL DISTANCE FOR EDENTULOUS DENTURE PATIENTS

Henry H. Faust, 319 E. First St., and Peter J. Faust, 1800 Rickety Ln., both of Tyler, Tex.

Filed Jan. 28, 1972, Ser. No. 221,573

Int. Cl. A61c 9/00

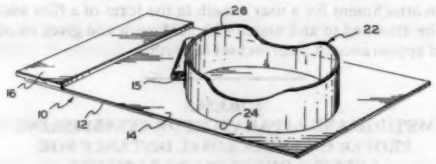
U.S. Cl. 32—19 **13 Claims**



A method and apparatus for determining the proper vertical or interocclusal distance for upper and lower dentures of edentulous denture patients to obtain most efficient chewing ability and establishing proper freeway space for unimpaired speech which includes use of magnetic gauge plates on one of the upper or lower denture base plates disposed to be spaced from the biting edges or incisals of central anterior or incisor teeth mounted on the other base plate to establish the proper relationship during normal movement of the wearer's mandible with respect to the maxilla during normal speech functions. The apparatus includes magnetic gauge plates adapted to be supported on a supporting platform affixed to one of the denture base plates, and which are formed with predetermined thickness to enable the dentist to build up the proper height of the exposed surface of the gauge plates to a dimension representing the edges or incisals of the central anterior or incisor teeth for such denture to establish the proper freeway space between the incisal edges of the anterior or incisor teeth on the dentures. The gauge plates are adjustable to accommodate horizontal prognatic or retrusive overjet where required. The magnetic character of the gauge plates positively holds the same in position on platform fixed to the denture base plate when the proper vertical dimension has been determined and established. The spacing is preferably established

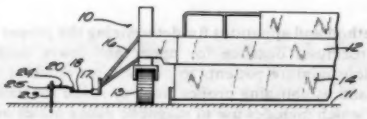
by use of a phonetic chart or reading card having a series of words or a sentence for reading by the patient to produce the desired freeway space relationship between the incisals and the exposed surface of the gauge plates on the opposite denture base plate when the patient reads the chart before the dentist. The words on the chart are chosen to produce sibilants and similar phonetic combinations resulting in the close proximity of the incisals to the exposed surface of the gauge plates, with the lips of the patient open during the pronunciation of such words for observation by the dentist and determination of the proper freeway space for both chewing and unimpaired speech.

3,763,566
CEMENTATION TAB
Don H. Carlson, 5330 S.W. Westdale Dr., Portland, Oreg.
Filed July 6, 1971, Ser. No. 159,713
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 R **9 Claims**



A cementation tab having a pressure sensitive adhesive surface serves as a carrying and manipulating tool for dental bands, crowns and inlays. When used to carry a band it, with the band, forms a containing cup for cement, and also may be used to wipe away excess cement.

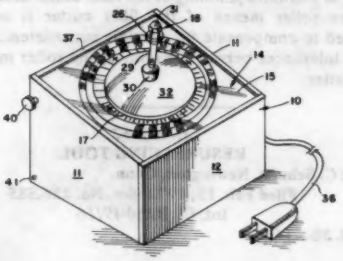
3,763,567
STRINGLINE HOLDER
Michael I. Hudis, Brookfield, Wis., assignor to Rexnord Inc., Milwaukee, Wis.
Filed Mar. 30, 1972, Ser. No. 239,503
Int. Cl. G01c *15/00*
U.S. Cl. 33—1 LE **2 Claims**



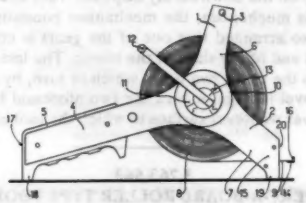
A soft iron rod is flattened at its end and then notched to form separate flat portions which are then oppositely curled to form a stringline holder. The curled ends are of nominal thickness whereby the sensor of a roadway construction machine operating along the stringline may readily pass the holder. The holder is of rugged integral and low cost construction.

3,763,568
SPECTACLE LENS LAYOUT APPARATUS
Andrew M. David, 107 Crescent Dr., Hampton, Va.
Filed Sept. 21, 1971, Ser. No. 182,426
Int. Cl. G02b *27/2, 27/34*
U.S. Cl. 33—174 A **1 Claim**

A protractor and light box for use in laying out guide markings on spectacle lenses prior to grinding features a simplified light box structure which enables quick replacement or changing of protractor cards. The protractor card forms a unit assembly with the light box top transparent plate and spring-loaded lens holder. The unit assembly is readily removable from the box body with a minimum of effort.



3,763,569
TAPE MEASURE
Joanny Merlat, Besancon, France
Filed Mar. 22, 1972, Ser. No. 237,182
Claims priority, application France, Apr. 1, 1971, 7112399
Int. Cl. G01b *3/10*
U.S. Cl. 33—138 **2 Claims**

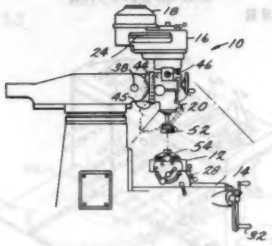


A tape measure comprises a tape wound between a pair of side plates forming an open frame having a first arm with a haft and a second arm, disposed at about 120° to the first, with means for guiding unwound tape along a given direction. A rear plane face of the haft, substantially perpendicular to said given direction, and extensions to the haft and to the second arm which lie in a plane perpendicular to the plane face of the haft, form means for resting the tape measure against perpendicular plane surfaces to facilitate the taking of inner measurements.

3,763,570
APPARATUS FOR ADJUSTING THE RELATIVE INCLINATION OF TWO MEMBERS
Harold A. Andersen, 627 Monroe St., Gretna, La.
Filed Mar. 23, 1971, Ser. No. 127,329
Int. Cl. B27g *23/00*
U.S. Cl. 33—370 **1 Claim**

A method is provided for adjusting orientation of the head of a machine tool with respect to the worktable thereof. A first bullseye level, mounted on an adjustable platform, is leveled upon a known surface by using the platform adjustments and then placed upon the worktable. Next a second bullseye level which is suspended from a shaft on a platform perpendicular thereto is grasped by the chuck of the machine tool head by

means of the shaft. The adjustable machine tool head is then adjusted to that second bullseye level indicates a reading



identical to the first bullseye level. Thus, the head and the work table of the machine are rapidly brought into a perfectly perpendicular alignment.

3,763,571

APPARATUS FOR CONTACTLESS GUIDING OF WEBS

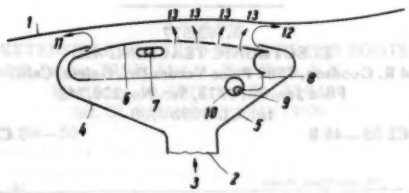
Hilmar Vits, Leichlingen, Germany, assignor to Vits Maschinenbau GmbH, Langenfeld (Rhineland), Germany

Filed Apr. 26, 1971, Ser. No. 137,298

Claims priority, application Germany, Apr. 27, 1970, P 20 20 430.2

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 A 8 Claims



This is a method of, and apparatus for, contactless guiding a web of material to be treated by a fluid medium, the flow energy of which is produced in a nozzle. One and the same nozzle can be optionally used to produce cushions of the treating medium which maintain the web of material in a floating condition or to produce a jet shaped by the back of an airplane wing profile whereby the web of material is kept in a floating condition by subjecting it to pressure and suction forces.

3,763,572

METHOD AND APPARATUS FOR PNEUMATICALLY DISCHARGING A DRUM CENTRIFUGE

Hans-Joachim Titus, Von-Hees-Strasse 5, Heppenheim/Bergstrasse, Germany

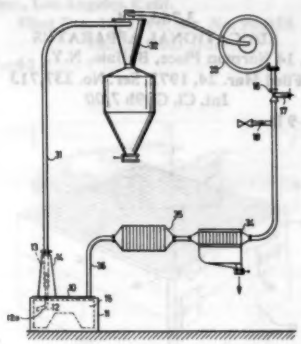
Filed June 9, 1971, Ser. No. 151,231

Claims priority, application Germany, June 9, 1970, P 20 28 267.1

Int. Cl. F26b *17/24*

U.S. Cl. 34—58 10 Claims

A continuously operating filter centrifuge is automatically discharged and the discharged product is dried within the pneumatic conveyance system. The solvent vapors are reclaimed through condensation from the inert carrier medium which is recirculated. The gas-tight circulation system begins and ends at the centrifuge and thus avoids any noticeable losses in either product, or solvent, or nitrogen. It makes



possible the elimination of the oxygen surveillance, previously needed to provide safety against explosions.

3,763,573

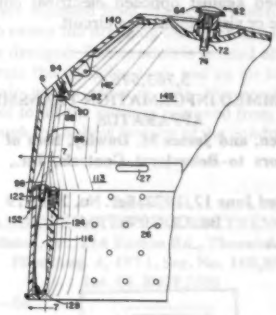
HAIR DRYER

Nial C. Bartram, Lancaster, and William J. Scheid, Leola, both of Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed Oct. 11, 1972, Ser. No. 296,544

Int. Cl. A45d *20/24*

U.S. Cl. 34—99 5 Claims



A portable hair dryer which includes a base, a head supporting assembly, and a dryer head assembly which automatically increases in volume when unlocked from a storage configuration. The dryer head assembly includes a generally annular air distribution plenum therein for receiving drying air and directing it generally radially inwardly, and a hood or cover which is pivotally mounted in respect to the annular plenum.

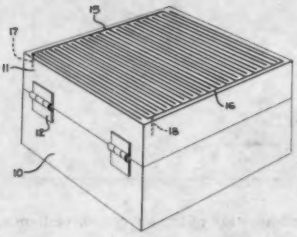
The portable hair dryer is of the hard-hat type having the general configuration of an articulated, collapsible Z, and the entire base and head supporting assembly nests for storage within the head assembly, even though the volume of the head assembly is substantially smaller in the storage configuration than in the expanded or raised operating configuration.

Upon being unlocked from the nested storage configuration, the hood or cover is automatically raised with respect to the plenum to increase the volume within the head assembly for receiving a greater portion of the head of the user in the head assembly. The cover is automatically lowered with respect to the plenum when the unit is locked into a nested storage position with the hood closely overlying the plenum to provide an effective dust and contamination shield.

In a preferred embodiment, a vent gap between the hood and plenum is automatically created at the upper-front region

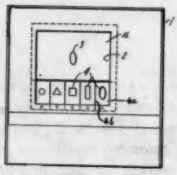
of the user's head space. A non-jamming latch mechanism automatically pivots the shell to the raised position.

3,763,574
EDUCATIONAL APPARATUS
Joel S. Rose, 14 Norman Place, Buffalo, N.Y.
Filed Mar. 24, 1972, Ser. No. 237,713
Int. Cl. G09b 7/00
U.S. Cl. 35—9 D **4 Claims**



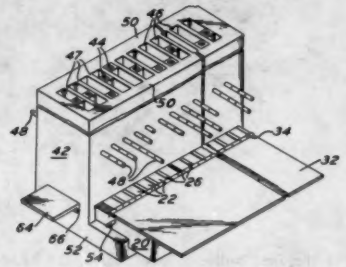
A set or assortment of cards bears question material, together with multiple choice answers. The card is placed face up on a surface containing closely spaced opposed conductors of an electric signalling circuit. At the rear of the card there is a recess in registry with the correct answer and containing an electrically conductive bottom wall, so that the electrically conductive material is normally spaced above the electrical conductors. When an answerer presses his finger upon a correct answer the electrically conductive bottom wall of the recess is pressed against opposed electrical conductors to close an audible or visual indicating circuit.

3,763,575
PROGRAMMED INFORMATION TRANSMITTAL APPARATUS
Ronald S. Cohen, and James M. Dawley, both of Milwaukee, Wis., assignors to Behavioral Controls, Inc., Milwaukee, Wis.
Filed June 12, 1972, Ser. No. 261,919
Int. Cl. G09b 7/04
U.S. Cl. 35—9 A **22 Claims**



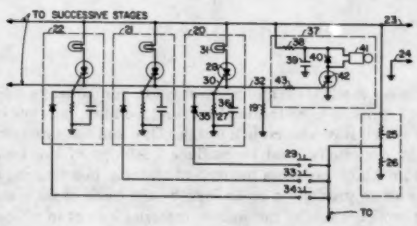
A presentation apparatus includes a annular tray mounted on the top of a projector and retaining a plurality of interrelated program slides. A code band is slipped over the vertical wall of the annular tray with a slight pressure fit as the attachment means. The bandheight generally equals the slide tray wall height and the band is divided into columns, one for each slide. Each column is similarly divided into a plurality of code spots. A reader is mounted in fixed operative relation to the slide projector and includes a separate channel to read each code spot in an aligned column. The reader includes an illuminated plastic block with a fiber optic tube for each channel embedded in the block and terminating adjacent the level of one row of code spots. The band can conveniently be formed of paper or a suitable plastic with each code spot defined by suitable intersecting lines. A pre-cut black pressure sensitive tape is provided for selective application to the code spots.

3,763,576
TEST SCORING APPARATUS
Theodor E. Sulkin, Easton, Pa., assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Mar. 15, 1971, Ser. No. 124,100
Int. Cl. G09b 1/02
U.S. Cl. 35—48 R **8 Claims**



An apparatus is provided for simplified scoring of tests and examinations, such as multiple-choice tests. The apparatus consists of a plurality of answer indicating slides each having a plurality of apertures corresponding to possible answers to a test question. At least one of the apertures of each slide is provided with a token, such as a ball bearing, representing the correct answer. After the examination an answer collecting slide having a plurality of openings is aligned with the apertures corresponding to the answers selected by the examinee. Wherever a correct answer was selected, the token is released from its aperture, and the total score is readily calculated. An apparatus for programming a plurality of scoring devices with the same answers is also provided.

3,763,577
ELECTRONIC TEACHING AID
David R. Goodson, 7581 Palos Verdes Dr., Goleta, Calif.
Filed Jan. 26, 1972, Ser. No. 220,742
Int. Cl. G09b 5/00
U.S. Cl. 35—48 R **5 Claims**



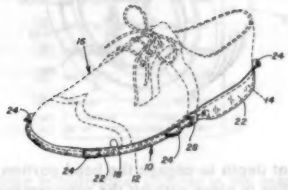
A portable teaching aid for school use which determines first student response to questions asked by the teacher by having the students depress electrical switches. The signal from the first switch depressed is fed into a control console containing a latching, exclusive or-gate. The gate lights a lamp on the control panel corresponding to the switch depressed and prevents any further responses after the first response from being indicated. A bell may be provided to ring with the first response. The circuit used does not need the conventional cross-circuiting using transistors and diodes to achieve the exclusive-or function. Silicon controlled rectifiers (SCR's) share a common-cathode resistor which produces a threshold voltage when any one SCR is triggered into conduction. This voltage raises the firing threshold of the non-conducting SCR's above the available trigger voltage producing the exclusive-or (lock-out) condition.

3,763,578

FLEXIBLE CLEANER FOR THE SOLE OF A GOLF SHOE

James I. Chadwell, 1107 East 45th Place, Apt. 17, Tulsa, Okla. 74105

Filed Mar. 20, 1972, Ser. No. 236,042
Int. Cl. A43b *1/10*
U.S. Cl. 36—7.3 10 Claims



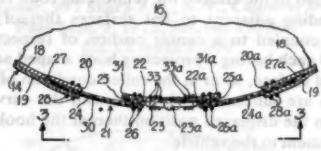
A flexible cleaner for the sole of a golf shoe is comprised of thin elastic material adaptable to be stretched over the sole of the golf shoe and is penetrable by the spikes of the shoe. The body of the cleaner includes a welt portion adjacent the periphery of the body to form a portion of the body into a side portion adaptable to receive the sole of the golf shoe. The body of the cleaner device is somewhat smaller than the sole of the golf shoe so that the body may be stretched into position on the shoe sole. The device further includes grasping means adjacent the side portion by which the body may be further stretched in order to cause debris adhering to the bottom of the body to be removed therefrom.

3,763,579

EXTENSIBLE ZIPPERED CLOSURE FOR BOOTS

Russell S. Dexter, 325 E. 41st St., New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,114
Int. Cl. A43b *11/00*; A44b *19/00*
U.S. Cl. 36—50 5 Claims



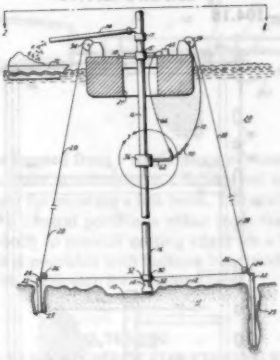
An improved type of zippered closure for apparel enveloping body parts, including boots of the over-the-calf type, is provided wherein a separable fastener or zipper with fabric mounting tapes is incorporated between spaced edges of a multi-ply apparel wall through expansible means providing relative movement of said spaced edges in adapting to contours of the engaged body part, and wherein said expansible means is assembled to the fastener tapes and apparel wall in a manner to have limited contact with the engaged body part. Important features of the new construction comprise fabric separable fastener mounting tapes which overlie the back side of the fastener links to substantially abut as the links are interengaged, extensible means secured to the outer surfaces of the fabric tapes adjacent the links, and the remote edges of the extensible means being secured between inner and outer plies of said apparel wall.

3,763,580

APPARATUS FOR DREDGING IN DEEP OCEAN

Francis A. Kuntz, Jr., San Pedro, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Dec. 10, 1970, Ser. No. 96,858
Int. Cl. E02f *3/88*
U.S. Cl. 37—61 8 Claims



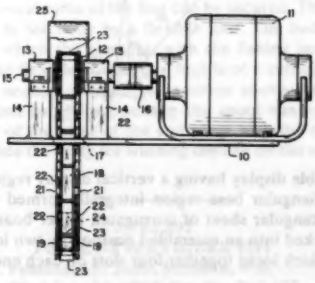
A surface stratum of an ocean bottom is dredged by a dredging tool connected to the lower end of an elongated hollow conduit pendulously supported from a floating vessel. A plurality of tool guiding lines extend from the vessel to the conduit via respective guides anchored at locations spaced about the region to be dredged. The effective lengths of the guide lines are adjusted from respective winches mounted on the vessel to sweep the dredging tool back and forth across the region to be dredged. The conduit is rotated about its vertical axis to operate the dredging tool, and an air lift sub injects a stream of air under pressure into the conduit above the dredging tool to lift the cuttings removed from the ocean bottom up through the hollow interior of the conduit.

3,763,581

HAND OPERATED ENDLESS TRENCHER

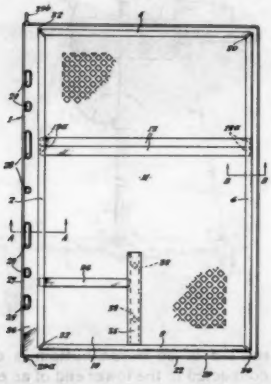
Carl E. Wolfston, Jr., 214 Easton Rd., Thornburg, Pa.

Filed Aug. 4, 1971, Ser. No. 168,854
Int. Cl. E02f *5/06*
U.S. Cl. 37—86 1 Claim



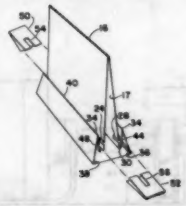
A portable trencher having a base member upon which is mounted a pair of chains which pass through the base member and are entrained about a pair of opposing sprockets. One of the sprockets is mounted to the top of the base member and operably connected with a motor mounted thereon. The other member is mounted below the base. The chains include cutting teeth and are connected together by means of a plurality of spacer members.

3,763,582
MOUNT
Arthur William Stevens, 62, Royal Esplanade, and Ronald Alan Tappy, 9, Dent-de-Lion Rd., both of Westgate-on-Sea, Kent, England
Filed May 10, 1971, Ser. No. 141,591
Claims priority, application Great Britain, May 8, 1970, 22,337/70
Int. Cl. B42f 9/00
U.S. Cl. 40—104.18 6 Claims



A mount for strip indexes and the like is a one-piece moulding in plastics material, e.g., polypropylene having a rectangular central planar part for supporting a strip or the like held by the mount, an overhanging ledge on each of the edges of the central part to entrap the ends of the strips, and means available for mounting the mount in an assembly such as a loose-leaf binder. The sheet portion is made foraminate or perforatable so that its area may be sub-divided by plugging a divider strip or strips into the holes. The overhanging ledges are provided on each of the two faces of the mount.

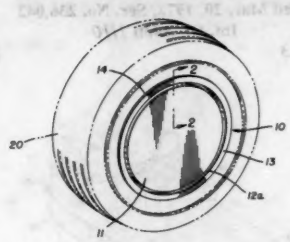
3,763,583
FOLDABLE PRODUCT DISPLAY
Richard G. Gregg, Huntsville, Ala.
Filed Oct. 10, 1972, Ser. No. 296,168
Int. Cl. G09f 1/00
U.S. Cl. 40—124.1 7 Claims



A foldable display having a vertical display region and supporting triangular base region integrally formed of an elongated rectangular sheet of corrugated paper board. The display is locked into an assembled position by two locking tabs, each of which locks together four slots on each end of the display.

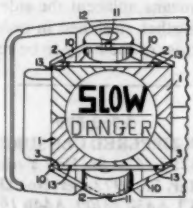
3,763,584
ADVERTISING DISPLAY DEVICE
Albert J. Falkenstein, 3704 Summit Rd., Barberton, Ohio
Filed June 8, 1972, Ser. No. 261,084
Int. Cl. G09f 1/00
U.S. Cl. 40—125 M 1 Claim

A one piece advertising display device for use in connection with pneumatic tires, and particularly a device intended to be inserted and locked in place in the bead area of the tire. The device includes a central body portion with a circumferential annular flange projecting from the rear of the body and being



of a sufficient depth to engage the bead portion of a tire and hold the device in place without the requirement of any additional components.

3,763,585
WARNING DEVICE
Alfred Mosch, 442 Poplar Street, Bridgeport, Conn.
Continuation-in-part of Ser. No. 741,970, July 2, 1968, Pat. No. 3,594,938. This application May 6, 1971, Ser. No. 140,657. The portion of the term of this patent subsequent to July 27, 1988, has been disclaimed.
U.S. Cl. 40—129 C 1 Claim

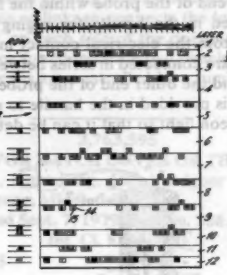


Disclosed is a warning device for vehicles comprising a rectangular warning sign of flexible material two rods for reinforcing opposite edges of the sign, each rod having a flat surface and an outwardly projecting curved surface; two elastic bands affixed to the ends of the reinforcing rods, respectively, and extending adjacent to flat surfaces thereof; hook-like members coupled to a center portion of respective elastic bands and each having a projecting hook shaped according to the curved surface, so as in the rolled condition of the device the hooks are substantially levelled with the curved surface whereas in the displayed position thereof the hooks serve for the attachment to the vehicle.

3,763,586
DISPLAY APPARATUS
Michael Christopher Ian Western, Leeds, England, assignor to The Rank Organisation Limited, Millbank, London, England
Filed Dec. 22, 1971, Ser. No. 210,983
Claims priority, application Great Britain, Dec. 24, 1970, 61331/70
Int. Cl. G09f 13/18
U.S. Cl. 40—130 K 6 Claims

A symbol display device comprises a pile of lamina each formed with grooves extending from one edge to another edge and light guides resting in the grooves. The laminae are so orientated in the pile that the light guides extend from one face of the pile of laminae to another face. The ends of the light guides at one face are disposed to define at least one symbol or portion of a symbol and the other ends are so grouped

that the ends of each group are capable of receiving light from a single light source. Arrangements are made to enable two



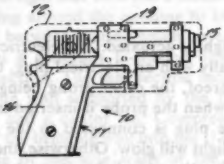
light guides lying in individual grooves in the same surface of one lamina to cross one another.

3,763,587

IN-CRANKED AUTOMATIC PISTOL

Ismael W. Firmalino, Capiz, Dumalag, Philippines

Filed Aug. 18, 1969, Ser. No. 850,918
Int. Cl. F41f *27/00*
U.S. Cl. 42—1 R **2 Claims**



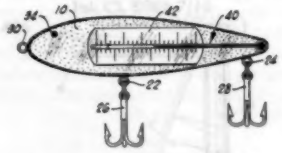
A pistol that can be cocked within its holster, the pistol having a pair of outwardly jutting projections on its sides, and when the pistol is tucked in the holster, these projections rest on a device firmly attached to the holster.

3,763,588

FISHING LURE

Robert D. Foster, 991 Sharp Ave., N.W., Camden, Ark.

Filed Sept. 9, 1971, Ser. No. 179,027
Int. Cl. A01k *85/00*
U.S. Cl. 43—4 **4 Claims**



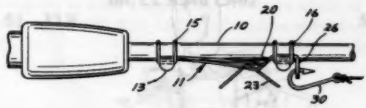
A fishing lure having a body portion constructed predominantly of a transparent synthetic resin material, and having embedded in the material, a capillary thermometer. A bulb portion of the thermometer is disposed adjacent a relatively thin terminal portion of the lure and the longitudinal axis of the thermometer extends along a portion of the length of the lure. The transparent plastic body of the lure has a coating material disposed over a substantial portion of the body, and arranged and configured to impart a natural bait appearance to the lure. Hook hanger eyes are attached to the synthetic resin body, and the body may be provided with a diving plane thereon.

3,763,589

COMBINATION ATTACHMENT FOR FISHING RODS

Frank D. Werner, 5405 Mount Normandale Curve, Minneapolis, Minn.

Filed Aug. 31, 1971, Ser. No. 176,532
Int. Cl. A01k *87/00*, *97/00*
U.S. Cl. 43—25.2 **6 Claims**



The device is formed from a single piece of material having side ears to facilitate attachment to a fishing rod and an apertured forward ear for securing a fish hook. The main body portion is slit and a central portion is offset from the remaining portion of the body to provide cutting edges for a fishing line. The fishing rod is provided with balance beam indicia used in conjunction with the device for weighing fish.

3,763,590

REMOVABLE END-PIECE FOR FISHING FLOAT ASSEMBLY

Andre Meulnart, 37, avenue Paul Doumer, Paris 16 eme, France

Filed Jan. 4, 1972, Ser. No. 215,366
Claims priority, application France, Jan. 11, 1971, 7100606
Int. Cl. A01k *93/00*
U.S. Cl. 43—43.11 **8 Claims**

In a separable end-piece for fixing a fishing line on a float assembly, the end-piece consisting of a body mounted on the float assembly, which forms an axial channel through which the fishing line passes, and a spool or element having a neck on which several turns of the line can be secured. The element is attached to the body by a flexible foot. The body forms a cavity into which the element, with the fishing line on it, is secured. The flexible connecting foot is of a sufficient length that it can occupy a transverse position above the blocking cavity so that its end supporting the spool can rest on the upper edge of the body of the end-piece with the spool positioned outside the body for winding the line on the neck of the spool.

3,763,591

PUPPET-TYPE FIGURE TOY

Marjorie A. Fontana, 157 Judd, Madison, Wis.

Filed June 14, 1972, Ser. No. 262,437
Int. Cl. A63h *13/16*
U.S. Cl. 46—145 **8 Claims**

A hand manipulable puppet-type figure toy having a tubular base and a puppet figure adapted to be retracted into and extended out of the base, the puppet figure having a three-dimensional head and a flexible hollow body of pliable sheet material extending downwardly from the head and attached at its lower periphery to the upper end of the tubular base, with a puppet manipulating rod connected to the head and extending downwardly through the puppet body and through the base to

enable hand manipulation of the puppet head from a level below the base in response to turning and lateral and longitu-

dinal movement of the rod relative to the base to produce different puppet figure movements, the tubular base being of a size to receive the head and the collapsed puppet body when the rod is fully lowered to effectively remove the puppet figure from view. A wind operated sound producing device is advantageously attached to the base and provided with a mouthpiece extending laterally from the base to enable the puppet operator to produce sounds concurrent with the manipulation of the puppet. A puppet manipulating knob is advantageously secured to the lower end of the rod with its underside shaped to provide a radially enlarged support surface normal to the axis of the rod for supporting the puppet figure in an upright position relative to its base.

3,763,592

ANIMAL WITH HARD AND SOFT BODY PORTIONS SIMULATED BY HARD AND SOFT MOULDINGS

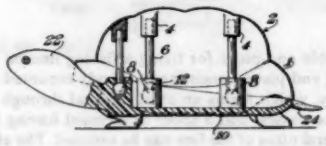
Alfons Adriaan Den Ouden, Antwerp, Belgium, assignor to Brabo Corporation S.A.N.V., Antwerpen, Belgium

Filed Aug. 24, 1972, Ser. No. 283,342

Claims priority, application Great Britain, Nov. 19, 1971, 53,864/71

Int. Cl. A63h *3/00, 3/16*

U.S. Cl. 46—152 **4 Claims**



A model of an animal which in nature has a soft body portion and a hard carapace or shell, comprising a hollow first moulding of relatively rigid material, said moulding having an external surface simulating the normally visible portions of the carapace or shell of the animal to be represented and an opening which receives a second moulding of soft resilient material configured to represent the externally visible soft body portions of the animal. The two mouldings may be joined by spigots engaging sockets formed in the second moulding so as to lock the second moulding to the first moulding in a relationship appropriate to the animal being represented.

3,763,593

APPARATUS FOR BRINGING EARTHWORMS TO THE SURFACE OF THE GROUND

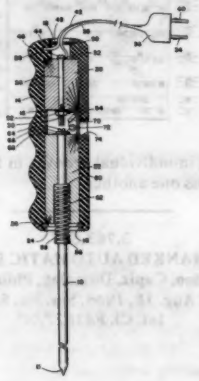
Tom L. Guthrie, Tulsa, Okla., assignor to Lectrasearch Corporation, Tulsa, Okla.

Filed May 8, 1972, Ser. No. 251,245

Int. Cl. A01c *1/00*

U.S. Cl. 47—1.3 **2 Claims**

Apparatus for bringing earthworms to the surface of the ground comprising a metallic probe having one end thereof adapted to be inserted in the ground and having an insulated handle slidably mounted at the other end of the probe. An electrical contact means is mounted within the handle and spaced from the end of the probe within the handle. A spring means is mounted in the handle for urging the probe in a direction away from the electrical contact means. A resistor and a neon light are connected in series between the electrical contact means and the other end of the probe within the handle. An opening is provided in the handle to permit visual inspection of the neon light so that it can be determined readily



when the neon light is actuated. The electrical contact means connects externally with an electrical plug, through one only of the prings thereof, the other prong being unconnected to anything. Thus, when the probe is inserted in the ground and the prong of the plug is connected to the ungrounded terminal, the neon light will glow. Otherwise, the plug is reversed in the socket. After the neon light glows, the handle is pushed downwardly against the action of the spring and full current will flow through the probe to bring earthworms to the surface of the ground.

3,763,594

DOORS WITH ELECTRO-MECHANICAL OPERATING MEANS

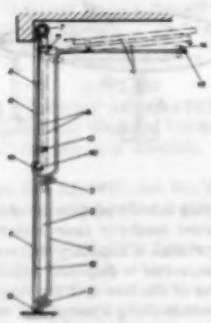
Frederic Banzel, 29, rue de Fosse des Treize, Strasbourg, France

Filed Dec. 20, 1971, Ser. No. 209,669

Claims priority, application France, Dec. 24, 1970, 7046934

Int. Cl. E05d *15/38*; E05f *15/00*

U.S. Cl. 49—126 **6 Claims**



A door with electro-mechanical operating means has a height substantially equal to half the height of the opening to be closed. Two elbowed guide rails are situated on either side of the opening and made fast with the door frame, and two

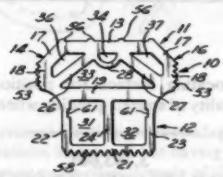
pairs of guide devices are provided on either side and quite close to the lower and upper extremities of the lower panel. A winding device constituted by a winding drum is driven by a motor and reduction gearing or a hydraulic or pneumatic element, and a strap or linkage connects the lower extremity of the lower panel, on each side of the opening, to the winding element. A device for couples the two panels of the door, and the operating means are controlled by a tumbler change-over switch.

3,763,595

SEAL FOR HATCH COVER OR THE LIKE

John R. Sudyk, Huntsburg, Ohio, assignor to The Johnson Rubber Company, Middlefield, Ohio

Filed Sept. 7, 1972, Ser. No. 286,877
Int. Cl. E06b 7/23
U.S. Cl. 49—485 13 Claims



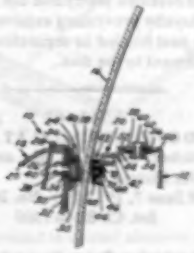
An elastomeric seal is disclosed which is particularly suited for forming a fluid-tight seal between a closure member and a structure extending around the opening to be closed such as the seal required between marine hatch cover and hatchway. The seal includes a generally U-shaped base section which supports a seal section. The seal section includes a bridging wall and a sealing wall supported by the bridging wall by spaced side legs and a center leg. Compression of the seal causes bowing of the bridging wall into the U-shaped base section and collapse of the side walls of the seal section. A resilient bumper is provided on the base wall to engage the bridging wall to maintain the level of compression force resisting further compression. As the seal is initially compressed, the compression force required builds rapidly to insure a proper seal with small seal compression. The seal is compressible through an additional substantial range without greatly increasing the required force of compression. Therefore, a proper seal is obtained through substantial ranges of seal compression without encountering excessive compressive forces.

3,763,596

DOOR WINDOW GLASS STABILIZER

Thomas W. Anderson, Troy, Mich., assignor to Amtel, Inc., Providence, R.I.

Filed Oct. 27, 1971, Ser. No. 193,044
Int. Cl. E06b 7/16
U.S. Cl. 49—496 1 Claim



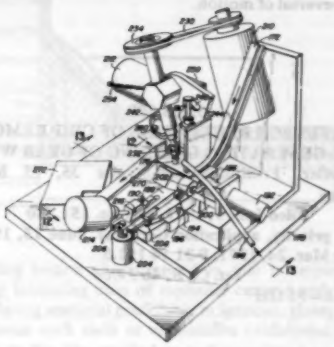
A door window glass stabilizer comprising a metal stamping and a strip of elastomeric material. The strip is secured to the stamping by an integral rib on its inner surface which projects through a slot in the stamping. The strip has a yieldable fiber flocking on its outer surface for contact with the window glass.

3,763,597

APPARATUS FOR PRODUCING CONTACT LENSES

Walter A. Schlotfeldt, 434 Wesley Dr., Addison, Ill.

Filed Oct. 13, 1971, Ser. No. 188,714
Int. Cl. B24b 13/02
U.S. Cl. 51—33 R 5 Claims



Apparatus for producing contact lenses, in which the cutting tool for cutting the base curve into a contact lens blank pivots about a point that is movable to vary the radius of curvature of the cutting tool, without moving the relative positions of the cutting tool tip and the blank. The blank with the base curve cut thereon is conveyed to supporting structure so that the base curve will be polished as it faces upwardly. The lens blank is held by a vacuum chuck during cutting of the power curve, and the power curve is polished with a wood polishing device.

3,763,598

METHOD OF MAKING OR TESTING INVOLUTE HELICAL GEARS AND MACHINE THEREFOR

Willy Hofler, Fridtjof-Nansen-Strasse 35, 75 Karlsruhe, Germany

Continuation-in-part of Ser. No. 82,952, Oct. 22, 1970, abandoned. This application Aug. 27, 1971, Ser. No. 175,605
Claims priority, application Germany, Dec. 15, 1969, P 19 62 723.7
Int. Cl. B24b 19/00, 1/00
U.S. Cl. 51—52 R 9 Claims

The method of making or testing an involute helical gear comprises the steps of generating a back and forward motion of the tooth-forming tool or of a tracer tool relative to the gear and along the lines of contact on the tooth flank while the gear moves in rolling contact relative to the tool or tracer, and of

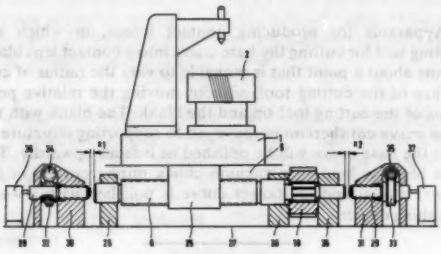
imparting an additional feed motion to either the tool or the gear in a direction parallel to the direction of the back and forward motion from the moment when the lines of contact of the tool have become substantially equal in length to the length of the executed strokes. The lines of contact are the lines along which two meshing gears are in driving engagement with one another which lines extend transversely across each tooth flank, and the utmost length of the back and forward tool strokes is made equal to the longest lines of contact on the tooth flank plus some idle travel near the upper and lower points of reversal of motion.

3,763,599

APPARATUS FOR REGULATION OF CHIP REMOVAL IN TEETH-GENERATING GRINDING OF GEAR WHEELS

Willy Hofler, Fridtjof-Nansen-Strasse 35, 75 Karlsruhe, Germany

Filed June 9, 1971, Ser. No. 151,380
Claims priority, application Germany, June 15, 1970, P 20 29 359.8; Mar. 24, 1971, P 21 14 151.5
Int. Cl. B24b *19/00*
U.S. Cl. 51—95 GH 12 Claims



An intermittent tooth generating grinding machine for gear wheels has a bed and a table mounted for translational movement on the bed. Such translational movement is produced by turning a screw which is located completely outside the gear box and is driven therefrom by connecting gearing. The length of the screw, other than the portion mounted in its bearings and the driving gearing, is substantially equal to the translational movement of the table. The screw carries a nut. In one form, the screw is slidable on the bed between adjustable stop members and the nut is fixed to the table. In a second form, the screw is fixed on the bed, the stop members are fixed on the table and the nut is engaged between the stop members. In the third form, the screw is fixed on the table and the stop members on the bed and the nut moves between the stop members.

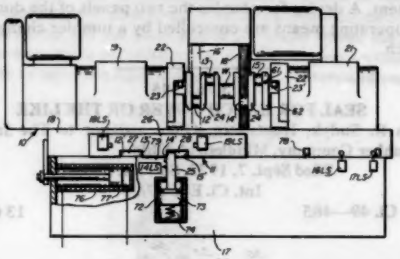
3,763,600

CARRIAGE POSITIONING DEVICE FOR A GRINDING MACHINE

William E. Shank, Waynesboro, Pa., assignor to Landis Tool Company, Waynesboro, Pa.

Filed Apr. 21, 1972, Ser. No. 246,173
Int. Cl. B24b *5/42*
U.S. Cl. 51—105 SP 6 Claims

An apparatus for controlling the longitudinal positioning of a carriage in a grinding machine which grinds the crankpins of small crankshafts. A spacing bar is employed which has wide notches formed therein so that each side of each notch serves as a separate locating surface for positioning a crankpin diameter. A plurality of spaced grinding wheels may be used.

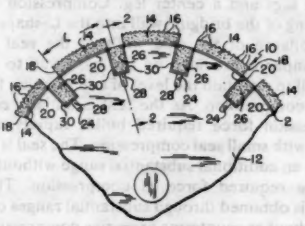


3,763,601

DIAMOND ABRASIVE CUT-OFF WHEEL

Henry Schwarzkopf, Pelham Manor, and John J. Bouvier, Buchanan, both of N.Y., assignors to Ferro Corporation, Cleveland, Ohio

Filed May 15, 1972, Ser. No. 253,060
Int. Cl. B24d *5/06*
U.S. Cl. 51—206.4 6 Claims



A segmented diamond abrasive cutting member comprising a central support and drive disk and cutting segments spaced along the periphery of the disk, together with wear resistant portions projecting laterally from the sides of the disk adjacent the periphery thereof, for retaining therebetween slurry resulting from the cutting operation, thus preventing relative movement between the retained slurry and the disk during rotation of the disk, and thereby preventing erosive undercutting of the disk which in the past has led to separation of the cutting segments from attachment to the disk.

3,763,602

METHOD OF FINISHING FLAT SURFACES

Stephen A. Boettcher, Deerfield, Ill., assignor to Speedfam Corporation, Des Plaines, Ill.

Filed June 7, 1972, Ser. No. 260,525
Int. Cl. B24b *1/00*
U.S. Cl. 51—317 11 Claims

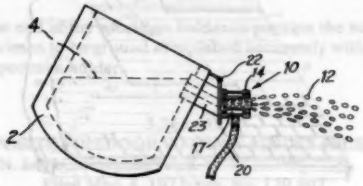
A method of finishing a flat surface of a work piece which comprises the steps of (1) machining a surface by urging the work piece under pressure toward a revolving plate which is covered with a free-flowing abrasive slurry, and (2) subsequently directing a stream of beads against the machined surface.

3,763,603

ALUMINUM OXIDE PRESSURE BLASTING ABRASIVES AND METHOD OF MAKING

Ronald W. Trischuk, Niagara Falls, Canada, assignor to Norton Company, Worcester, Mass.

Filed Apr. 16, 1971, Ser. No. 134,803
Int. Cl. B24c *1/04, 1/10*
U.S. Cl. 51—319 8 Claims



An improved pressure blasting product adapted for cleaning and peening operations in general but having a particular use in a method of shot peening objects made of aluminum. A substantially solid sphere of a refractory oxide material is formed that is adapted to be blasted against the object to be cleaned or tempered, preferably the sphere is a bauxite material that has been fused and subsequently solidified by air quenching to produce small spheres each having a microcrystalline structure, the spheres all being substantially solid.

ERRATUM

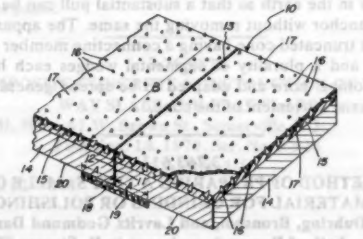
For Class 51—323 see:
Patent No. 3,763,611

3,763,604

COATED ABRASIVE BELT JOINT

John F. Malloy, Waterford, N.Y., assignor to Norton Company, Troy, N.Y.

Continuation-in-part of Ser. Nos. 822,934, May 8, 1969, abandoned, and Ser. No. 103,148, Dec. 31, 1970, abandoned. This application Mar. 10, 1972, Ser. No. 233,572
Int. Cl. B24d *11/06*
U.S. Cl. 51—399 40 Claims



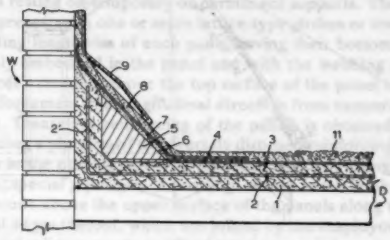
A butt joint is provided in coated abrasive material in which the abutting ends are joined together by means of an adhesive layer reinforced with a patch woven from man-made fibers of high tensil strength, the preferred butt joint being not only of higher tensile strength initially than the coated abrasive material but retaining this high tensile strength in usage to a high degree.

3,763,605

ROOFING SYSTEM AND METHOD OF APPLICATION

Wyndham J. Freeman, Downview, Ontario, Canada, assignor to Wyndham J. Freeman Ltd., Downview, Ontario, Canada

Continuation-in-part of Ser. No. 205,219, Dec. 6, 1971, abandoned. This application June 30, 1972, Ser. No. 268,157
Int. Cl. E04d *1/36*
U.S. Cl. 52—58 21 Claims



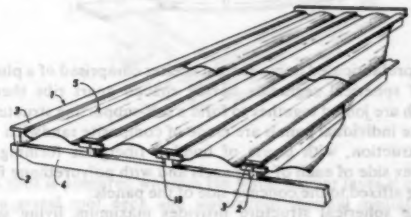
A roofing system characterized in that it employs a first loading or insulating coat of asphaltic cement and a suitable inert insulating material preferably in igneous, glassy, siliceous or micaceous rock such as vermiculite (exfoliated), pearlite (popped) or the like applied to and covering a roof deck, a waterproof membrane applied over said first loading coat and extending at least substantially to the edges thereof, and a second loading coat of asphaltic cement and a suitable inert insulating material preferably an igneous, glassy, siliceous or micaceous rock such as vermiculite (exfoliated), pearlite (popped) or the like applied over said waterproof membrane.

3,763,606

WEATHER PROTECTING AND VIEW OBSTRUCTING SCREEN

Ake Rindebong, Sunnegarde 28 S–430 40 Saro, Sweden

Filed Sept. 17, 1971, Ser. No. 181,387
Int. Cl. E04b *7/16*
U.S. Cl. 52—64 2 Claims



A roofing structure with a supporting frame having spaced apart beams with cover elements slideably connected at their edge portions to said beams, spanning the space between said beams and positioned on superposed levels and overlapping so that said cover elements can be slid onto or along said beams as desired.

3,763,607

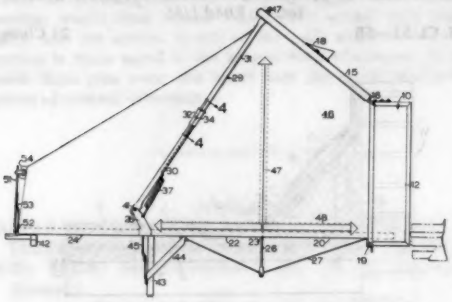
FOLDABLE CAMP SHELTER

Clinton G. Glover, 2556 Linda Vista, Clarkston, Wash.

Filed Apr. 27, 1972, Ser. No. 248,217
Int. Cl. A45f *1/06*; E04b *1/347*
U.S. Cl. 52—68 5 Claims

The shelter assembly is stored for travel within a rigid-walled container body integrated into the shelter when the unit is extended. It includes a multi-section floor hinged to the

lower portion of the container body, the sections being connected for extension as a rigid floor supported in a horizontal plane at an elevation above ground level. Foldable roof braces at each side of the erected shelter connect the floor and container cover. Flexible shelter walls extend between the container body, cover, and floor to provide sleeping space for persons using the shelter. The assembly is designed for semi-automatic extension and is readily available while mounted at the rear of a vehicle.



3,763,608

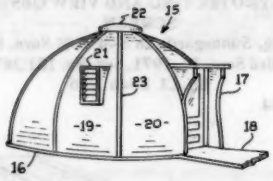
PREFABRICATED ALL WEATHER DOME-TYPE SHELTER

Cliff Chamlee, Box 1089, Odessa, Tex.

Filed Apr. 12, 1971, Ser. No. 132,999

Int. Cl. E04b *1/32*

U.S. Cl. 52—80 **1 Claim**



A prefabricated dome shaped shelter comprised of a plurality of spherical segments having spaced apart ribs thereon which are joined together to form a self-supporting structure.

The individual panels are made of composite sandwich type construction, with layers of bonded fiberglass forming the convex side of each of the panels and with polyurethane foam being affixed to the concave side of the panels.

The spherical structure provides maximum living space relative to the area of the enclosure means, as well as an all weather, portable lightweight construction suitable for all environmental living conditions.

3,763,609

SHINGLE ROOFING CONSTRUCTION

John F. Probst, Hartland, Wis., assignor to P.A.L. Development Corp., Butler, Wis.

Filed Aug. 3, 1972, Ser. No. 277,648

Int. Cl. E04d *5/02*

U.S. Cl. 52—105 **11 Claims**

A sheet of roofing paper includes two sets of visually distinct parallel guide lines which extend longitudinally of the paper. The guide lines of the first set are uniformly spaced apart and the width of the paper is not a multiple of the spacing between the first guide lines so that each end guide line in the set is spaced from the respective side edge of the paper a distance less than the spacing between the guide lines. The second set of guide lines includes a pair of guide lines each of which is located between the end guide line of the first set and the next adjacent guide line of that set. The guide lines of the first set serve as guides for laying rows of shingles and the guide lines of the second set serve as guides for applying subsequent sheets of roofing paper in lapping relation.

3,763,610

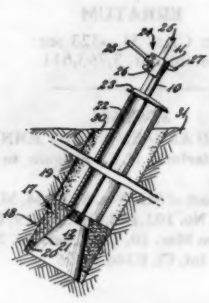
EARTH ANCHOR AND APPARATUS FOR APPLYING

Julius R. Ballew, P.O. Box 1716, Seminole, Tex.

Filed May 20, 1971, Ser. No. 145,383

Int. Cl. E02d *5/80*

U.S. Cl. 52—160 **1 Claim**



Expansible apparatus for anchoring one end of a connecting member in the earth so that a substantial pull can be exerted on the anchor without removing the same. The apparatus includes a truncated cone having a connecting member secured thereto and a plurality of segmental wedges each having a frusto-conical bore and adapted to be spread generally radially by axial movement of the cone.

3,763,611

METHOD OF PREPARING A TEST SAMPLE OF MATERIAL FOR GRINDING OR POLISHING

Ornolf Duhring, Bronshoi, and Lavritz Gudmund Damgaard, Virum, both of Denmark, assignors to H. Struers Chemiske Laboratorium, Copenhagen, Denmark

Filed Feb. 22, 1971, Ser. No. 117,449

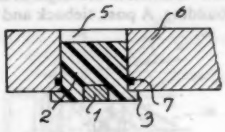
Claims priority, application Denmark, Feb. 23, 1970, 872/70

Int. Cl. B23c *3/00*

U.S. Cl. 51—323 **6 Claims**

A grinding and polishing specimen for micro-observation and testing purposes is made by moulding a sample of the material to be tested into a cylindrical or slightly conical block of synthetic resin with a circumferential collar adjacent one

end face where the sample is exposed. In placing the specimen in the cavity of a specimen holder, the collar is engaged with



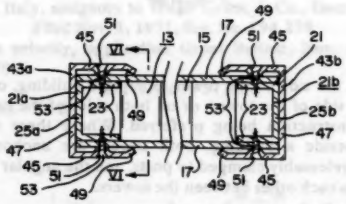
the front end of the specimen holder to position the surface of the specimen to be ground or polished accurately with respect to the specimen holder.

3,763,612

COMPOSITE FIREDOOR WITH AN ADJUSTABLE EDGE

Joseph N. Saino, Memphis, Tenn.

Filed Mar. 4, 1971, Ser. No. 120,807
Int. Cl. E04c *2/36, 2/38*
U.S. Cl. 52—309 **7 Claims**



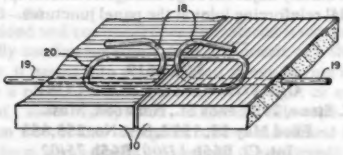
An assembly line method which includes providing a plurality of previously laminated steel sections, advancing the sections to a work station where they are severed to predetermined dimensions, then moving the severed sections past a plurality of stock supply points, stock cutting machines, and work stations where the stock and the sections are assembled and suitable joined together. These laminated sections include a core of resin-impregnated honeycomb kraft paper sandwiched between and bonded to a pair of confrontingly arranged sheets of steel. The finished firedoor panel includes various items of stock materials, e.g., "H" shaped vertical column member(s) for joining adjacent sections, splice plates for covering the abutting edges of adjacent sections, interior channel members, and exterior channel members. The latter two items extend along the perimeter of the door panel. The stock materials are fixedly attached to the severed laminated sections by a plurality of sheet metal screws to define a firedoor panel.

3,763,613

COMPOSITE CONCRETE CONSTRUCTION OF TWO-WAY SLABS AND FLAT SLABS

Harry H. Wise, 61 W. Brown St., Somerville, N.J.

Filed Jan. 14, 1970, Ser. No. 2,924
Int. Cl. E04b *5/52*
U.S. Cl. 52—447 **10 Claims**



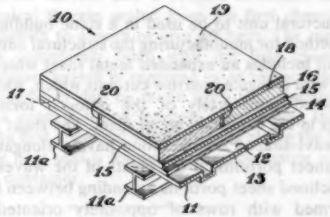
The present disclosure relates to a method and means of building two-way slabs and flat slabs, reinforced concrete floors and roofs employing composite concrete flexural construction which require little or no formwork, greatly reduce the use of temporary stringers and shores, increase the speed of construction, reduce the number of skilled workmen on the job and materially reduce the over-all cost of construction. The bottom layer of the composite concrete floor is formed by using a plurality of thin prefabricated concrete panels of considerable length and of a width in the neighborhood of around 8 feet or so, laid side by side in place on the job site with their ends resting on temporary or permanent supports. The panels are precast with one or more lattice-type girders or trusses extending lengthwise of each panel having their bottom chords firmly embedded in the panel and with the webbing and top chords extending above the top surface of the panel to afford reinforcement in a longitudinal direction from support to support. Transverse reinforcing of the panels is obtained by embedding a plurality of transversely disposed reinforcing rods or bars in the precast panels, the ends of said bars being formed with special upwardly extending return bend hooks which protrude above the upper surface of the panels along the marginal edges thereof, which are joined by the employment of a special splicing means to afford transverse reinforcement from panel to panel. The splice is completed and the transverse reinforcement obtained when the concrete topping applied on the site completely embeds the hooks, splicing link and trusses and has cured and set to form the composite concrete floor slab.

3,763,614

ROOF CONSTRUCTION

Mike Arthur Hyde; Peter Denton Chalmers, both of Sarnia, Ontario, and Walter Blair Mackie, Vancouver, B.C., all of Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed July 14, 1971, Ser. No. 162,486
Int. Cl. E04b *7/00, 1/66*
U.S. Cl. 52—309 **5 Claims**



A roof is prepared wherein the water barrier layer is placed on a metal roof deck and waterproof thermal insulation is placed over the water barrier layer. A non-combustible fire resistant insulating layer is disposed beneath the water resistant layers and above the metal roof deck. The water barrier layer is not subjected to the extremes of temperature that are encountered when the water barrier layer is the outermost element of the roof structure and the structure is resistant to fire originating above or below the metal deck.

3,763,615

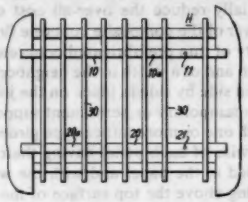
METHOD OF CONSTRUCTING A WINDOW ACCESSORY

Kelichirou Yamazaki, 12-1, 6-chome Kaneido, Kouton-ku, Tokyo, Japan

Filed Jan. 12, 1972, Ser. No. 217,112
Claims priority, application Japan, Jan. 27, 1971, 46/2398
Int. Cl. E04g *3/14;* **E06b** *3/68*
U.S. Cl. 52—507 **8 Claims**

A method of constructing a window accessory, such as a window railing or a window lattice, in which the window accessory is attached to the side wall of the building while being

assembled at the same place, that is to say, at the height of the window. There is no need for lifting a heavy finished accessory



of great bulk up to the height of the window, because it is not required to assemble such an accessory on the ground.

3,763,616

STRUCTURAL UNIT HAVING AN EXPANDED METAL SHEET AND METHOD FOR MANUFACTURING THE STRUCTURAL UNIT

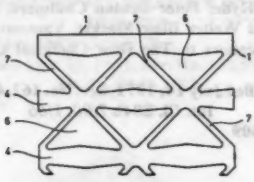
Romolo Pastorelli, and Paolo Martini, both of Modena, Italy, assignors to Romolo Pastorelli, Modena, Italy

Filed Nov. 5, 1971, Ser. No. 195,946

Claims priority, application Italy, Nov. 6, 1970, 40116 A/70; Nov. 6, 1970, 40117 A/70; Nov. 6, 1970, 40118 A/70

Int. Cl. E04c *3/09, 5/04*

U.S. Cl. 52—635 **12 Claims**



A structural unit to be used in a static building structure, and a method for manufacturing the structural unit. The structural unit includes an expanded metal sheet which initially is formed with elongated narrow cut-outs which, when the sheet is stretched transversely of the cutouts, form triangular openings in the expanded metal sheet. The sheet is then bent into a wave-shaped configuration having elongated uninterrupted sheet portions at the crests of the waves and oppositely inclined sheet portions extending between these crests and formed with rows of oppositely oriented triangular openings. This latter expanded metal sheet has fixed to the crests formed by the elongated uninterrupted sheet portions a structure such as beams, concrete slabs, or the like, so that in this way a structural unit is formed, and this structural unit may then be joined with suitable metal or concrete beams, or supported on suitable walls, so that the structural unit can form floors, balconies, or the like.

3,763,617

TIEBACK APPARATUS

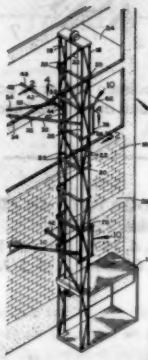
William C. Nell, Hollywood, Fla., assignor to C.M.H. Inc., Fort Lauderdale, Fla.

Filed Apr. 3, 1972, Ser. No. 240,611

Int. Cl. E04g *3/04*

U.S. Cl. 52—651 **4 Claims**

Tieback apparatus for anchoring a lift tower beside and to a multistory building during construction of the building. The apparatus includes a vertical post mounted in an upright position at one side of the tower, the post providing a vertical axis and having a portion horizontally opposite a floor of the building. An elongated horizontal tieback member is fastened at one end to a floor of the building and has the other end thereof adjacent the post. The latter end of the tieback member is coupled by clamp means to the post, the clamp means being releasable to permit vertical adjustment of the tieback member along the post. The clamp means is also angularly adjustable to permit variation in the angle of the tieback member relative to the building. A post, tieback and clamp may be pro-



vided on the side of the tower facing the building, or on the opposite side of the tower, or on both sides of the tower, the latter construction being preferred. Where there are twin towers beside a building, both towers are anchored with tiebacks releasably clamped to posts, and the angular tiebacks may cross each other between the towers.

3,763,618

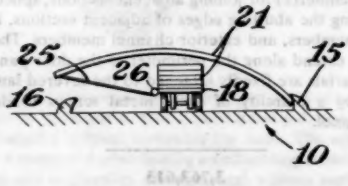
METHOD OF PREPARING ARCHED STRUCTURES

Robert B. Bennett, Saginaw, and Stephen J. Waling, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1971, Ser. No. 117,368

Int. Cl. E04b *1/32*

U.S. Cl. 52—741 **6 Claims**



Arched or barrel vault structures are prepared from laminated panels having a single rigid skin and a deformable core by engaging one edge of the panel in a frame or base, forcing the opposite edge toward the restrained edge, causing the panel to bow to a sufficient degree that both edges are restrained in an arched configuration, installing a number of panels in closely adjacent edge to edge relationship, providing an internal reinforcing joint at the panel junctures.

3,763,619

CAP FOR CARPET ROLL CORE

Harris E. Stone, 293 Lenox St., Norwood, Mass.

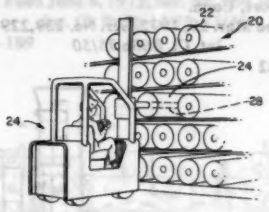
Filed May 22, 1972, Ser. No. 255,653

Int. Cl. B65b *1/00*; B65h *75/02*

U.S. Cl. 53—3 **3 Claims**

A tubular paper core, about which a carpet roll is coiled, is provided at its opposite ends with a pair of barbed caps, which

grip the outside wall of the core and the barbs of which can be bent outwardly, as with a screwdriver, without harming the



carpet so that the caps can be removed simply and the carpet roll can be unwrapped readily.

3,763,620

PACKAGING APPARATUS AND METHOD

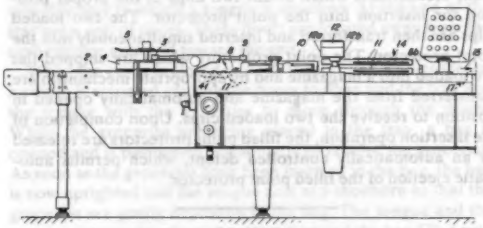
Giorgio Aldo Maria Giraudi, and Nino Imperiale, both of Milan, Italy, assignors to W. R. Grace & Co., Duncan, S.C.

Filed Nov. 1, 1971, Ser. No. 194,279

Claims priority, application Great Britain, Nov. 4, 1970, 52,465/70

Int. Cl. B65b *31/02*

U.S. Cl. 53—22 B 8 Claims



The invention relates to an automated vacuum bagging and sealing unit. In the device the size of an article is measured to determine the appropriate bag size and the article is then fed to a mechanically spreading bag holding guide. The filled bag is conveyed to a vacuum chamber including partial confinement bars and final gathering studs to effect clipping under high vacuum.

Such a machine can be operated using only one operator and at throughput rates higher than previously possible.

3,763,621

SEALING APPARATUS AND METHOD FOR REFUSE COMPACTOR

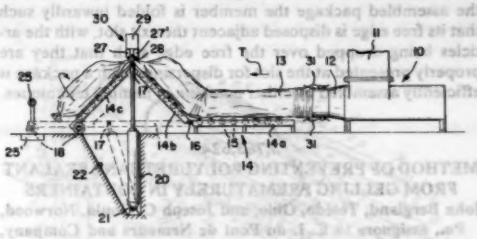
Larry Klein, and Elliot J. Lefkowitz, both of 3856 Bronx Blvd., Bronx, N.Y.

Filed July 26, 1971, Ser. No. 166,088

Int. Cl. B65b *1/20*

U.S. Cl. 53—24 12 Claims

As shredded and compacted waste material is extruded as a substantially continuous strand from the nozzle of a shredder-compactor, it passes into an elongated sleeve having a closed end. Once a predetermined quantity (by weight or extruded length) of such compacted material fills the closed downstream end of this elongated sleeve the strand is interrupted to form a gap and a twisted-off (constricted) neck is formed in the sleeve at the gap to close the sleeve at this location. The sleeve is then sealed at this neck, e.g., by heat-sealing or stapling, and cut to form a sealed package and to form a new closed downstream end on the upstream sleeve section. The upstream section of the sleeve can be rotated to form the



twisted-off neck, or the downstream section of track or sleeve can be made to rotate the enclosed strand and sleeve.

3,763,622

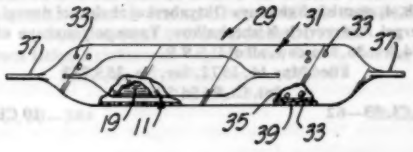
METHOD OF MAKING A PACK FOR ABSORBING OR ADDING HEAT

Joseph Stanley, Jr., Topanga, Calif., assignor to Kay Laboratories, Inc., Santa Ana, Calif.

Continuation of Ser. No. 23,598, March 30, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 289,599

Int. Cl. B65b *3/00*

U.S. Cl. 53—25 14 Claims



A hot or cold pack including a rupturable container having a first chemical therein and a second container having a second chemical therein sealed from the first chemical and reactive therewith to absorb or give off heat. The rupturable container is completely filled with the first chemical to facilitate rupture thereof in response to an impact blow. The rupturable container can be made from heat sealable sheet material in a process which involves heat sealing through a column of the first chemical which extends above the location at which the heat seal is formed to thereby assure complete filling of the container.

3,763,623

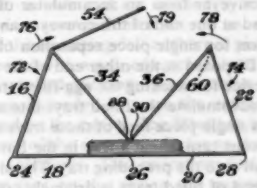
METHOD OF FORMING A DISPENSING PACKAGE

George D. Crouch, Delran, N.J., and Stanley D. Muggenborg, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 861,323, Sept. 26, 1969, abandoned. Filed Jan. 18, 1972, Ser. No. 218,675

Int. Cl. B65b *11/48*

U.S. Cl. 53—32 2 Claims



A package for dispersing thin sheet-like articles such as film sandwich bags, and normally embodying either a rectangularly or triangularly shaped carton having an exit slot along an edge

or mid-region of one of its panels. The need for a separate insert for positioning the articles at the exit slot is avoided by the use of member die cut as one piece with the carton blank. In the assembled package the member is folded inwardly such that its free edge is disposed adjacent the exit slot, with the articles being dropped over the free edge such that they are properly presented at the slot for dispersing. Such a package is efficiently assembled by either machine or manual techniques.

3,763,624

METHOD OF PREVENTING POLYURETHANE SEALANT FROM GELLING PREMATURELY IN CONTAINERS

John Bergland, Toledo, Ohio, and Joseph C. Gould, Norwood, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 16, 1971, Ser. No. 134,895
Int. Cl. B65b *29/00*
U.S. Cl. 53—37 **5 Claims**

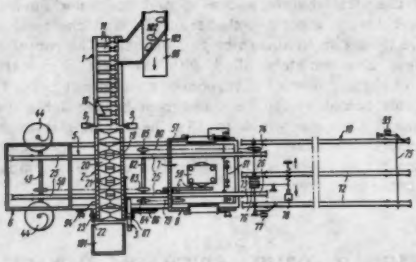
An improved method of packaging polyurethane sealant compositions is provided. This method consists of adding a small amount of a curing inhibitor to a container over the sealant prior to sealing the containers with a lid or cap.

3,763,625

INSTALLATION FOR AUTOMATIC PLACEMENT OF EGGS INTO CELLULAR TRAYS

Rady Mikhailovich Slavin, Zelenodolskaya ulitsa, 15, korpus 1, kv. 45, Moscow; Vilyam Lvovich Levin, 4 Michurinsky tupik, 4, stantisia Skhodnya Oktyabrskoi zheleznoi dorogi, and Sergei Andreevich Kishechnikov, Yasnopolyanskaya ulitsa, 9/4, kv. 36, Moscow, all of U.S.S.R.

Filed May 16, 1972, Ser. No. 253,733
Int. Cl. B65d *57/10*
U.S. Cl. 53—62 **10 Claims**



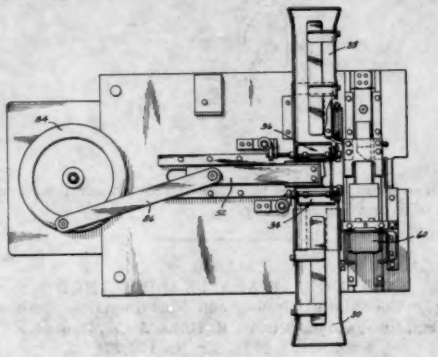
In the installation for automatic placement of eggs into cellular trays the eggs are from an egg director fed into cells of an egg accumulating conveyer with subsequent displacement of a certain number of eggs into the cells of the tray. The latter is supplied by a conveyer from an accumulator of empty trays which is mounted at one end of this conveyer and is provided with a mechanism for single-piece separation of empty trays from the stack. Disposed at the other end of the tray carrying conveyer is a device for stacking the egg-filled trays, comprising a means to accumulate the filled trays into a stack and a mechanism for a single-piece feed of these trays to said means with a simultaneous turn of each tray in the horizontal plane through 90° relative to the preceding tray. The mechanism for a single-piece feed of filled trays is drivingly connected with the mechanism for single-piece separation of empty trays from the stack, with the egg accumulating conveyer, and with the tray supply conveyer, for their coordinated movement with the egg accumulating conveyer.

3,763,626

AUTOMATIC POINT PROTECTOR APPLICATOR

Raymond W. Pinkepank, Jackson, Mo., and William R. Starr, Johnson, Kans., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Mar. 29, 1972, Ser. No. 239,229
Int. Cl. B65b *35/50*
U.S. Cl. 53—142 **7 Claims**



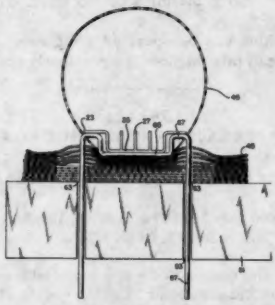
A machine to automatically feed two loaded clips of ammunition into point protectors, which are positioned and opened automatically. The clipped ammunition is gravity fed head first down feed chutes on either side of the machine, and released from the chutes in a controlled sequence by escapement mechanisms which orient two clips in the proper position for insertion into the point protector. The two loaded clips are then transferred and inserted simultaneously into the point protector. The point protectors which are shipped flat are loaded into a magazine and by appropriate mechanism are transferred from the magazine and automatically opened in position to receive the two loaded clips. Upon completion of the insertion operation, the filled point protectors are released by an automatically controlled detent, which permits automatic ejection of the filled point protector.

3,763,627

ARTICLE PACKAGING SYSTEM

Vytautas Kupcikevicius, Chicago, and Ernest T. Pedersen, Oak Lawn, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 23, 1971, Ser. No. 173,960
Int. Cl. B65b *5/04*, *43/36*
U.S. Cl. 53—189 **14 Claims**



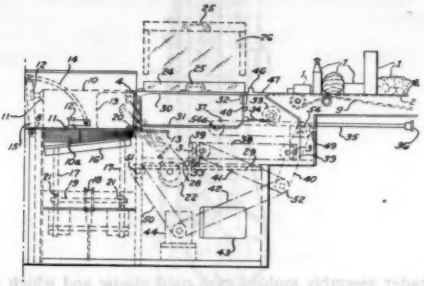
Flexible packaging bags at a packaging station are air opened one at a time atop a stacked supply of bags held on a wicket, product being packaged is directed into each opened bag through product guide assemblies which extend part way into the bag and each product filled bag is pulled from the wicket to be conveyed from the packaging station.

3,763,628

BAG LOADER

William A. Bodolay, 15 Fern Glen Rd., East Longmeadow, Mass.

Filed June 8, 1972, Ser. No. 260,781
Int. Cl. B65b *43/28, 43/36*
U.S. Cl. 53—189 33 Claims



In order to speed up the check-out of customers at a discount store operation, and in order to eliminate one person at the station who has to package the groceries or merchandise, the within invention has been developed.

There is a tray with a cover which is of the overall dimensions of the typical grocery bag but slightly smaller. There is a lid cover on top of the tray. At the bottom of the tray is a movable tray to which a tongue is attached. At the end of the tray are a pair of doors. These doors are located away from the cash register area and toward the exit.

When the cover is closed and the tray is filled with groceries a switch is actuated causing the doors to open and the tray and the tongue with the groceries to move through the doors. While the groceries are being placed in the tray, a bag is opened and is positioned horizontally to receive the groceries. As soon as the groceries have been inserted in the bag, the bag is now uprighted and the tongue acts as a shoehorn so that the groceries are gently deposited in the bag. The tongue and the tray are returned to the normal position and the bag filled with the groceries is conveyed in this instance to a rotary type conveyor which acts as a pick-up station from where the customer may collect the grocery bags.

There is an electrical control circuit for synchronizing and operating the aforesaid functions. There is a special bag opening means whereby a blower assists the opening of the bags which are in a horizontal position in conjunction with suction cups which also assist the opening the bag and which suction cups are mounted on a movable arm which has to be displaced when the bags have been filled and are to be delivered to the conveyor.

The electrical circuit is actuated by switches which are strategically placed at key locations along the path of the various pulleys and chains which operate the moving parts.

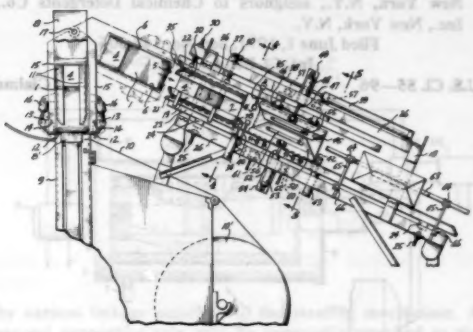
3,763,629

WRAPPING APPARATUS FOR BAG PACKS

Thomas L. Carlstrom, and Jack P. Leavitt, both of Tacoma, Wash., assignors to American Manufacturing Company, Inc., Tacoma, Wash.

Continuation of Ser. No. 4,206, Jan. 20, 1970, abandoned.
This application Feb. 9, 1972, Ser. No. 224,940
Int. Cl. B65b *11/12, 11/22, 49/08*
U.S. Cl. 53—379 2 Claims

A wrapper is wrapped around a commodity to form mouths projecting beyond opposite ends of the commodity. Lip folders engage lips at one side and then at the opposite side of the mouths to fold such lips inward against the commodity and form opposed flaps at opposite sides of the package between the lips. After spraying adhesive on the facing sides of the flaps, heated doors fold the flaps toward each other against the commodity; and the heat sets the adhesive. The package is



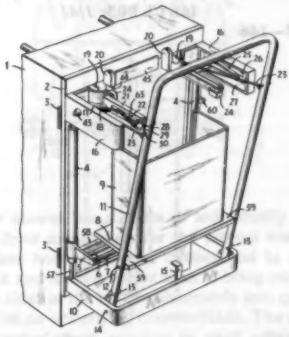
dragged from a lip-folding station to a flap-folding station and then to a discharge station by reciprocable shifting hooks.

3,763,630

APPARATUS FOR THE OPENING OF CARRY BAGS AND FOR THE SECURING THEREOF IN OPENED CONDITION DURING FILLING OF COMMODITIES

Asbjorn Helge Kristiansen, Vogtsgate 56, Oslo 4, Norway

Filed Jan. 17, 1972, Ser. No. 218,187
Int. Cl. B65b *43/28*
U.S. Cl. 53—384 10 Claims



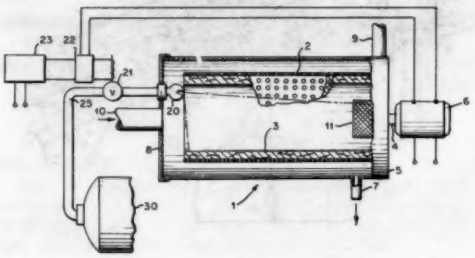
Apparatus for the opening of carry bags and for the securing thereof in opened condition during filling of commodities, comprising a casing with a magazine in which the carry bags are suspended on rods and are opened by movement of an operating device arranged in front of an opening of the magazine. On the operating device there is pivotally mounted an opening device with a pair of catchers, and by the opening of a bag this is pulled out from its suspension on the carrying rods and hangs distended between the catchers and holding means mounted on the casing. The filled bag is released by inward movement of the operating device so that the bag slides down onto a platform. The operating device and all the cooperating means on the casing are mounted on a frame which is pivotally hinged thereto in front of the magazine opening so that the frame may be turned aside by filling of the bags into the magazine, thereby giving free access to the latter.

3,763,631

METHOD AND APPARATUS FOR REMOVING ENTRAINED MATTER FROM CENTRIFUGAL FILTER MEDIA

Edward A. Horn; Irwin Miness, and Henry R. Rosten, all of New York, N.Y., assignors to Chemical Detergents Co., Inc., New York, N.Y.

Filed June 1, 1971, Ser. No. 148,606
Int. Cl. B01d *33/02*
U.S. Cl. 55—96 **4 Claims**



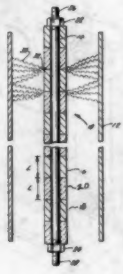
A method and apparatus for removing solid and liquid material entrained in the filter media of a centrifugal aerosol filtering system by periodically spraying a sufficient quantity of a solubilizing solution on the filter media to solubilize the entrained material thereby allowing it to pass through the filter media.

3,763,632

DISCHARGE ELECTRODE FOR AN ELECTROSTATIC PRECIPITATOR

Pavel Imris, West Haven, Conn., assignor to Resource Control, Inc., West Haven, Conn.

Filed July 22, 1971, Ser. No. 165,108
Int. Cl. B03c *3/41*
U.S. Cl. 55—146 **2 Claims**



A discharge electrode for use in electrostatic precipitators is provided wherein the surface of the electrode is formed of alternate sections of conducuve and nonconductive materials supported on an electrically conductive inner rod. When the electrode is in use, corona formation occurs at the interface between the conductive and nonconductive sections.

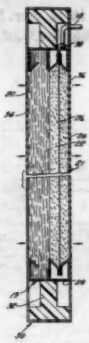
3,763,633

ELECTROSTATIC AIR FILTER

Charles W. Soltis, 647 W. Forest, Houston, Tex.

Filed Feb. 9, 1971, Ser. No. 113,883
Int. Cl. B03c *3/41*
U.S. Cl. 55—126 **15 Claims**

An air cleaner is provided comprising a filter assembly, an electrical power pack, and interconnecting high-voltage transmission means. The filter assembly is constructed of a filter unit having a prefilter and two layers of a dielectric filter media between which is sandwiched a positively charged grid. The filter assembly further includes a pair of negatively charged plates between which the filter unit is placed, and a header assembly molded of a rigid plastic and which is also provided with the male high-voltage receptacle and high-voltage contacts to the anode grid.

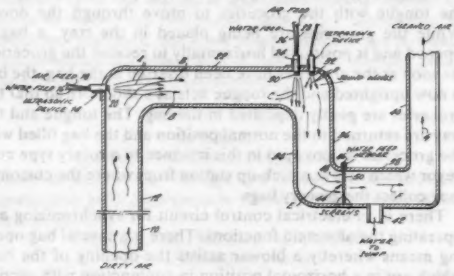


3,763,634

AIR POLLUTION ABATEMENT APPARATUS

Howard Alliger, 10 Ponderosa Dr., Melville, N.Y.

Continuation-in-part of Ser. No. 594,844, Nov. 16, 1966, Pat. No. 3,390,869, and a continuation-in-part of Ser. No. 645,948, June 14, 1967, Pat. No. 3,389,971. This application June 24, 1968, Ser. No. 739,500
Int. Cl. B01d *47/06*
U.S. Cl. 55—223 **2 Claims**



An air pollution abatement apparatus for removing soot and noxious materials comprising means for delivering a finely divided mist and ultrasonic vibrations into an exhaust for absorbing and rendering more soluble in the mist various noxious materials. A de-mister including a pair of adjacent screens and header means for delivering water between the screen is provided for disposal of the noxious materials.

3,763,635

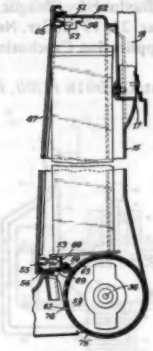
VACUUM CLEANER CONSTRUCTION

Joseph F. Schmitz, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 30, 1971, Ser. No. 185,134
Int. Cl. B01d *46/02*
U.S. Cl. 55—374 **10 Claims**

An upright vacuum cleaner construction having a one-piece housing defining means for housing the motor-driven fan and the dust-collecting bag. The housing is adapted to be pivotally carried on a base assembly defining a nozzle so as to dispose a handle secured to the housing suitably for manipulation of the vacuum cleaner by the user. The housing may be formed of molded plastic and may be provided with a flameproof enclosure surrounding the motor and electrical wiring in the lower

portion thereof for preventing injury to the relatively flammable plastic housing portions. The lower portion of the housing may be cylindrical and the motor-driven fan means may be disposed coaxially thereof for pivoting coaxially on the base



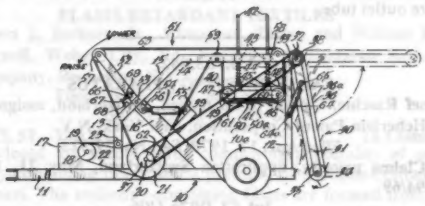
assembly. The fan means may be arranged to direct air from the bag space over the electrical wiring and motor so as to cool the motor and discharge the air to exteriorly of the housing away from the bag enclosing portion.

3,763,636

GROUND ENGAGING ROTARY BALER

John W. Bliss, Vinton, Iowa., assignor to Starline, Inc., Harvard, Ill.

Filed Aug. 14, 1972, Ser. No. 280,599
Int. Cl. A01d *75/00*
U.S. Cl. 56—16.4 **46 Claims**



Apparatus for rolling hay into a bale in contact with the ground. A wheeled frame, either self-propelled or towed by a farm tractor, provides a baling chamber which is open at the bottom. Elevating conveyor means at the rear of the chamber picks up material and pushes it forward as the machine advances along a swath. Separate traction conveyor means extends forwardly from the elevating conveyor means to assist in rolling the material and to compact it, and rises as the bale increases in size. When the bale reaches a predetermined size, the elevating conveyor means swings out of the way to release the bale from the chamber.

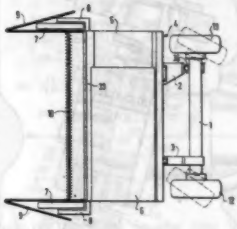
3,763,637

REVERSIBLE CHASSIS FOR SELF-PROPELLING COMBINES

Helwig Schmitt, Raiffeisenstr. 5, Grebenstein, Germany

Filed Jan. 17, 1972, Ser. No. 218,185
Int. Cl. A01d *75/22*
U.S. Cl. 56—228 **10 Claims**

A combine of the type designed to harvest grain-type crops and including a self-propelled chassis having adjustably mounted thereon at least one axle capable of being selectively positioned in either of two operative positions which are arranged substantially perpendicular to one another thereby allowing the combine to be driven in a direction either substantially parallel to or perpendicular to its longitudinal axis. The adjustable axle may be a drive axle and also may be steerable



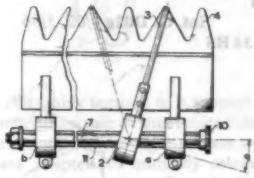
by various linkage attached to the steering mechanism. A second supporting axle may be removably attached to the combine frame in a corresponding position relative to the operative position in which the adjustable or drive axle is located.

3,763,638

MOWING APPARATUS

Alexander Jan Vogelenzang, Wageningsestraat 28, Andelst, Netherlands

Filed May 10, 1972, Ser. No. 252,084
Claims priority, application Germany, May 11, 1971, P 21 23 369.2; Mar. 17, 1972, P 22 13 090.1
Int. Cl. A01d *55/00*
U.S. Cl. 56—293 **19 Claims**



A cutter bar mower has a series of individually swingable cutters and a drive mechanism for the cutters which causes them to oscillate horizontally for cutting and to simultaneously rock back and forth sidewise so as to bring cutting edges along opposite sides of the cutters alternately into cooperative engagement with an underlying counterblade. The cutters are driven in an out-of-phase relation to each other so as to neutralize inertia forces in the longitudinal direction of the cutter bar, and the cutting edges of the cutters and counterblade are shaped to produce a slicing cut at an approximately constant cutting angle.

3,763,639

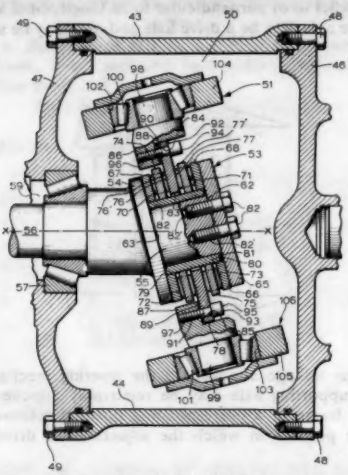
SICKLE BAR MOWER HAVING A SWASH PLATE DRIVE

Homer N. Grillot, Naperville, Ill., assignor to International Harvestor Company, Chicago, Ill.

Filed Nov. 15, 1972, Ser. No. 306,663
Int. Cl. A01d *55/02*
U.S. Cl. 56—296 **9 Claims**

A mower having a transverse mower bar with forwardly projecting cutting fingers shearingly cooperating with cutting knives of a sickle reciprocal thereon. The sickle is oscillated by a novel drive which incorporates an adjustable swash plate driven by a horizontal power input shaft which comprises an adjustable swash plate clamping assembly arranged diagonally

with respect to the axis of rotation of the input shaft and embraces the swash plate which is pivoted on a horizontal axis to



a yoke of a vertical output shaft which has an arm moving in a horizontal arcuate path and connected to one end of the sickle.

3,763,640

PRODUCTION OF A COMPOSITE THREAD

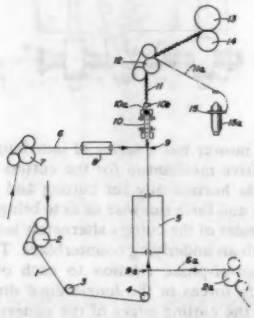
Manfred Nagel, Wawern, and Rainer Seuss, Konz, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Feb. 19, 1970, Ser. No. 12,220

Claims priority, application Germany, Feb. 19, 1969, P 19 08 219.0

Int. Cl. D02g *1/02, 3/36*

U.S. Cl. 57—34 HS 28 Claims



Process of producing a composite thread in which at least one multifilament thread is run freely and substantially perpendicularly onto a core thread being drawn through a false-twist interval, such that the multifilament thread forms a sheath of at least partially separated filaments wrapped around the core thread, at least one of the core and sheath threads being heat-fixed or heat-set while in a twisted state. The product of the invention is a composite thread exhibiting the properties of natural fibers, especially wool-like properties, with relatively large variations in texture and crimping characteristics. The apparatus of the invention includes, in addition to conventional false-twist means for the core thread, a delivery means to supply at least one additional multifilament thread in a free path substantially perpendicularly onto the core thread in its false-twist interval.

3,763,641

METHOD AND APPARATUS FOR REMOVING IMPURITIES RELEASED FROM STAPLE FIBERS

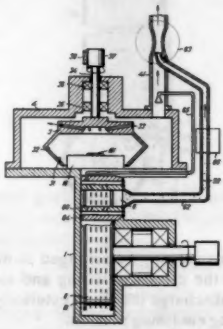
Ctibor Doudlebsky; Frantisek Jaros; Frantisek Ferki, all of Usti nad Orlici; Milan Chrtek; Ceska Trebova, and Antonin Cap, Usti nad Orlici, all of Czechoslovakia, assignors to Uyzkumny Ustav Bavlnarsky, Prague, Czechoslovakia

Filed Mar. 21, 1972, Ser. No. 236,758

Claims priority, application Czechoslovakia, Mar. 24, 1971, 2137/71

Int. Cl. D01h *11/00, 1/12*

U.S. Cl. 57—56 13 Claims



Method of and apparatus for removing impurities released from staple fibers on a separating device preceding an underpressure spinning chamber and delivering them into a collecting area. The impurities are sucked away from the collecting area by underpressure produced by the pressure of air drawn off from the spinning chamber, a part of the air that is being drawn off from the spinning chamber being fed to the collecting area and dragging the impurities into an underpressure outlet tube.

3,763,642

FALSE TWISTING APPARATUS

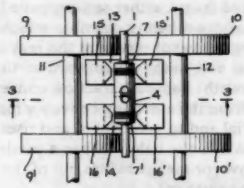
Josef Raschle, Canton of St. Gallen, Switzerland, assignor to Heberlein Patent Corporation, New York, N.Y.

Filed Apr. 17, 1970, Ser. No. 29,525

Claims priority, application Switzerland, May 21, 1969, 7694/69

Int. Cl. D02g *1/06*

U.S. Cl. 57—77.45 4 Claims



Apparatus for false-twisting yarn wherein two axially parallel pairs of discs form a throat, and a twist tube for crimping textile yarn is supported tangentially against the peripheral surfaces of the discs in the throat therebetween and is pressed against same by magnet means, the twist tube comprising a central portion equipped with a jacket consisting partially of non-magnetic material having cylindrical zones on both sides of its center which zones are formed of material having low magnetic loss characteristics, these zones being positioned opposite the poles of the magnetic means to assure diametral magnetic flux through the tube.

3,763,643

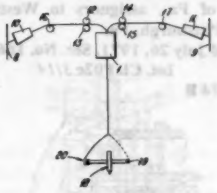
NOVEL HIGH-BULK YARN

Michel Buzano, Villeurbanne (Rhone), France, assignor to Rhone-Poulenc-Textile S.A., Paris, France

Division of Ser. No. 807,540, March 17, 1969, Pat. No. 3,678,549. This application Nov. 13, 1970, Ser. No. 89,512

Int. Cl. D02g *3/24, 3/34*

U.S. Cl. 57—140 J 1 Claim



A high-bulk yarn having interlaced filaments substantially free from loops, and preferably having spherical knops affecting the yarn as a whole, is made by subjecting a continuous filament (or less preferably a staple fibre) yarn to the action of a turbulent fluid in a suitable nozzle, into which the yarn is fed non-axially so that it rubs against one wall thereof. If desired more than one yarn can be employed, making a single composite yarn. The invention includes also a nozzle, preferably having its yarn input opening flared to provide for the necessary friction of the yarn against the side of the nozzle.

3,763,644

FLAME RETARDANT TEXTILES

Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 9, 1972, Ser. No. 251,628

Int. Cl. D02g *3/04, 3/44*

U.S. Cl. 57—140 BY 16 Claims

Disclosed are textile yarns comprising a plurality of antimony-containing fibers and a plurality of bromine-containing fibers. The antimony-containing fibers are formed from a polymer having an antimony-containing compound dispersed therein and the bromine-containing fibers are formed from a polyester having a bromine-containing compound dispersed therein. The textile yarns of this invention exhibit an unobvious combination of commercially acceptable mechanical properties and commercially acceptable flame retardancy. Blends of the fibers used to prepare the yarn are also disclosed. Fabrics of the yarn are also disclosed.

3,763,645

WORLD CLOCK

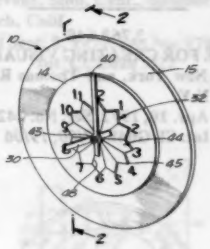
Sunyong P. Kim, 1350 W. Jefferson Blvd., Los Angeles, Calif.

Filed Feb. 22, 1972, Ser. No. 227,984

Int. Cl. G04b *19/22, 47/00*

U.S. Cl. 58—43 5 Claims

An hour dial is provided which is adapted to be attached on the same shaft used to rotate the hour hand on a conventional clock. The hour dial is shaped into twelve equal sectors each having a pointed periphery. When the conventional hour and minute hand of the clock are set to the local time, stickers provided with the names of cities in other time zones of the world can be placed on the respective sectors of the hour dial which are pointing to the hour of the time in the respective cities. As the hour dial revolves with the hour hand, each of the sector



points to the hour of the time in the city identified by its sticker.

3,763,646

TIMEPIECE MOUNTING MEANS

Jacques Jeanmonod, Boudry, Switzerland, assignor to Heuer-Leonidas S.A., Bienne, Switzerland

Filed Feb. 17, 1972, Ser. No. 227,084

Claims priority, application Switzerland, Feb. 18, 1971, 2371/71

Int. Cl. G04b *37/00*

U.S. Cl. 58—88 R 9 Claims

A timepiece is releasably secured to a support surface by a fixture device comprising a pair of sheet materials, at least one of which has a multitude of hooking members over an active surface, which are adapted to mutually releasably adhere together when brought into contact. One piece of material is fixed to the rear face of the time-piece, and a plurality of second pieces of material with adhesive backings can be provided, at least one of which can be fixed to a watchband.

3,763,647

POLYCHROMATIC WATCH DIAL PLATE

Ichiro Shibanai, Tokyo, Japan, assignor to Kyoshin Sangyo Co. Ltd., Tokyo, Japan

Filed Sept. 22, 1972, Ser. No. 291,839

Int. Cl. G04b *19/06*

U.S. Cl. 58—127 R 3 Claims

A polychromatic watch dial plate wherein either on the surface of the dial plate or on the figure portion is coated with a

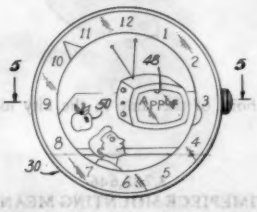
liquid crystal film so that the dial plate or the figure portion may have a variety of colors according to the change of the ambient temperature.

3,763,648

TIMEPIECE FOR CREATING VISUAL EFFECTS

David L. Pakter, New York, and Thomas R. Krauss, Middle Village, both of N.Y.

Filed Apr. 10, 1972, Ser. No. 242,539
Int. Cl. G04b *47/00, 19/06*
U.S. Cl. 58—148 12 Claims



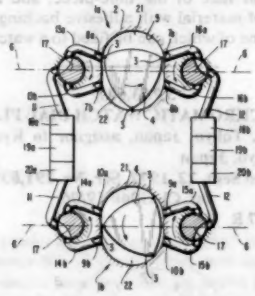
A timepiece which in addition to indicating time will also create certain visual effects. The timepiece has a face and a transparent crystal covering the face and defining therewith a space in which rotary hour-indicating and minute-indicating elements are located. A rotary second-indicating element is also located in this space. One of the rotary elements has a feature which enables it to contribute toward a predetermined visual effect. The crystal itself carries a stationary structure which coacts with the latter one rotary element for contributing to the desired visual effect.

3,763,649

HOT GAS ROTARY PISTON ENGINE

Jurgen Wahnschaffe, Cologne; Dietrich Gwinner, Waiblingen; Konstantin Pattas, Stuttgart, and Eberhard Braun, Waiblingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Mar. 29, 1971, Ser. No. 128,665
Claims priority, application Germany, Apr. 4, 1970, P 20 16 218.9
Int. Cl. F02g *1/04*
U.S. Cl. 60—24 12 Claims



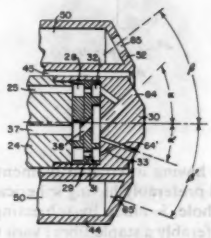
A hot gas engine in the form of a rotary piston engine of trochoidal construction in which two rotary piston engines operate with predetermined phase displacement, of which one is constructed as hot gas section and the other one as cold gas section; each rotary piston engine includes a triangular piston rotatably supported on an eccentric shaft within an epitrochoidally shaped two-arched housing case whereby inlet and outlet openings are provided in the contact surface of the casing in front and to the rear of the minor axis; the inlet and outlet openings are arranged both in the hot gas section as also in the cold gas section mutually opposite one another and are connected with each other by way of branch lines provided with control devices and main lines that include heaters, regenerators and coolers interconnected in the main lines.

3,763,650

GAS TURBINE TEMPERATURE PROFILING STRUCTURE

Charles E. Hussey, Glenolden, and Serafino M. DeCorso, Media, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 26, 1971, Ser. No. 166,095
Int. Cl. F02c *3/14*
U.S. Cl. 60—39.74 R 18 Claims



An axial flow gas turbine having a structure including a fuel nozzle for providing any desired turbine inlet temperature profile according to the mechanical stress on the rotating turbine blades. The fuel nozzle may be a combined multiple fuel gas and liquid type or a single fuel type, an important feature of both being the provision of fuel injection asymmetrically into the combustion chamber to establish a desired ignited fuel temperature pattern therein which continues down to the turbine inlet. This asymmetrical fuel supply into the combustion chamber is obtained by providing a number or size of fuel jets according to the temperature desired; for example, to provide a temperature gradient decreasing in an inward turbine radial direction through the combustor to correspond to the desired turbine blade inlet temperature profile. The angular jet direction also may be varied for different parts of the fuel injection pattern to obtain a further spatial control of the fuel injection distribution into the combustor. These fuel distribution control variables may be used singly or in any combination, and the same or different ones may be used for the gas and liquid jets in multiple fuel nozzles. In addition, a further modification of the intake temperature profile may be obtained by providing relatively cool jets of gaseous fluid through spaced orifices in the radially inner sides of the transition passages which direct the high temperature working gas to the turbine blades.

3,763,651

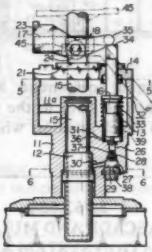
SEAT LIFTING DEVICE FOR USE IN BARBERS OR BEAUTY PARLORS AND MEDICAL FACILITIES

Masaharu Okiyama, 254 Kitahagusa, Higashiosaka-shi, Osaka, Japan

Filed July 6, 1971, Ser. No. 159,835
Claims priority, application Japan, July 10, 1970, 45/60543
Int. Cl. F15b *13/01, 15/26;* A47c *3/30*
U.S. Cl. 60—477 5 Claims

The seat portion of a chair is mounted on the upper end of a piston rod connected to a piston reciprocable in a relatively large diameter cylinder in a pedestal portion of the chair. A hydraulic circuit interconnects this cylinder with a smaller diameter cylinder including a reciprocable plunger. A clamp is associated with the piston rod of the large cylinder and fixed against displacement relative to the pedestal portion of the chair. The clamp is a split clamp and is arranged to grip the piston rod to lock it in position. Locking is effected by a brake

member oscillatably supported on a wall closing the upper end of a cavity in the pedestal, the brake member having an inclined face engageable with the split clamp to close the clamp. An arm extends from the brake member and is engaged with the upper end of a rod secured to the piston operating in the small cylinder. A foot operated treadle, which is generally U shaped, is connected to the brake member to oscillate the brake member including the arm. Check valves are interposed in oil passages interconnecting the two cylinders and connecting the smaller cylinder with the cavity in the



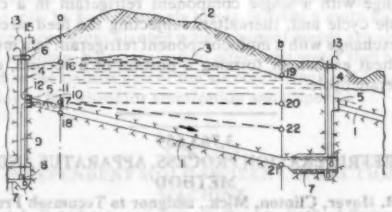
pedestal. When the treadle is raised to a relatively upper position and oscillated, it oscillates the piston in the small cylinder to pump oil beneath the piston in the large cylinder to raise the seat. When the seat is at the desired height, the treadle is raised to its upper limiting position and closes the clamp on the rod connected to the seat to lock the seat in position. To lower the chair, the treadle is moved to its lower limiting position releasing the brake member from the split clamp and allowing the seat and the associated parts to descend under their own weight.

3,763,652

METHOD FOR TRANSPORTING FLUIDS OR GASES SPARSELY SOLUBLE IN WATER

Jussi Rinta, Simenintie 4A, Mankkaa, Finland

Filed Jan. 17, 1972, Ser. No. 218,125
Claims priority, application Finland, Jan. 22, 1971, 181/71
Int. Cl. E21f *13/00*
U.S. Cl. 61—.5 **10 Claims**



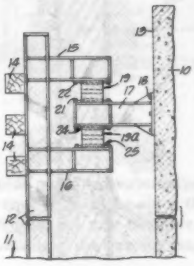
Fluids of limited solubility in water are transported through a conduit having walls that are permeable with respect to transported fluid. The conduit is surrounded by a layer of water having a pressure greater than that of the transported fluid. Accordingly water leaks into the conduit, but the transported fluid does not leak out. At suitable intervals, the leakage water is pumped off.

3,763,653

CUSHIONED DOCK FENDER STRUCTURE AND SHEAR TYPE CUSHION MEMBER

John Anoush Shirvany, Simi, Calif., assignor to Byron Jackson Inc., Long Beach, Calif.

Filed Sept. 8, 1971, Ser. No. 178,589
Int. Cl. E02b *3/22*
U.S. Cl. 61—46 **2 Claims**



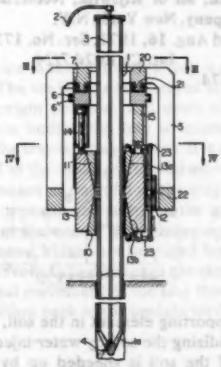
A dock fender structure for cushioning the impact of vessels thereagainst by the deflection in shear of elastomeric cushion members, and a cushion member adapted for use therein.

3,763,654

PILE DRIVING AND DRAWING APPARATUS

Kunijiro Matsushita, 53, Kokicho-2-chome, Toyokawa, Japan

Filed Sept. 13, 1972, Ser. No. 288,630
Claims priority, application Japan, Nov. 8, 1971, 46/89287
Int. Cl. E02d *7/20, 7/24*; B65h *5/06*
U.S. Cl. 61—53.5 **1 Claim**



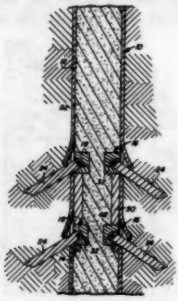
A pile driving and drawing apparatus in which a plurality of drawing and driving wedges are disposed in a substantially hollow cylindrical member having an upwardly tapered and a downwardly tapered inner peripheral surface portion so as to be intimately engageable with these inner peripheral surface portions while releasably holding a pile during drawing operation and driving operation respectively. Means are further provided for causing rotation of the pile being driven and drawn into and out of the earth.

3,763,655

PILING WITH EXTENDABLE ANCHOR LEGS

Charles W. Galuska, San Jose, Calif., assignor to Lois Edwards, San Jose, Calif., and Irene Miller, Boston, Mass., a part interest

Filed May 2, 1972, Ser. No. 249,552
Int. Cl. E02d 5/54
U.S. Cl. 61—53.68 6 Claims



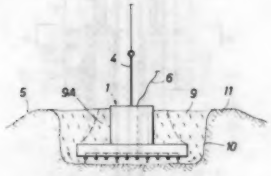
A tubular piling of rigid construction, but including frangible side wall portions. The piling is provided with lower outwardly and downwardly inclined cam surfaces therein and includes a follower slidable downwardly in the piling equipped with depending elongated ground spikes hingedly supported at their upper ends from the follower for outward swinging of the lower ends of the spikes about horizontal axes disposed generally normal to radii of the piling passing through the upper ends of the ground spikes. Upon lowering of the follower in the tubular piling the lower ends of the ground spikes are engageable with the aforementioned cam surfaces to cam the lower ends of the ground spikes outwardly through the side wall portions of the piling and into the surrounding ground area.

3,763,656

PLACING OFFSHORE SUPPORTING ELEMENTS

Francois Van Daalen; Johannes Van Steveninck, and Gerardus A. M. Verroen, all of Rijswijk, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,180
Int. Cl. E02d 7/24
U.S. Cl. 61—53.74 4 Claims



To place a supporting element in the soil, it is lowered into the soil after fluidizing the soil by water injection. Thereafter, consolidation of the soil is speeded up by supplying water thereto at a relatively low velocity.

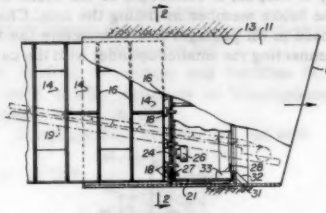
3,763,657

MEANS FOR ELIMINATING ROLL OF TUNNELING SHIELD

George P. Colson, Sonoma, Calif., assignor to Engineering Field Services, San Rafael, Calif.

Filed Jan. 26, 1972, Ser. No. 220,756
Int. Cl. E01g 5/14
U.S. Cl. 61—85 3 Claims

A tunnel shield is pushed through the ground by hydraulic rams, but has a tendency to rotate and, unless corrected, the forward support for the spoil conveyor and other equipment gets out of proper alignment and there are other undesirable results. To restore alignment an interior shell is rotatably mounted inside the shield and provides the forward support for the aforementioned equipment. Means is provided to rotate the interior shell relative to the shield so as to restore the interior shell to level position whenever the shield has rotated.

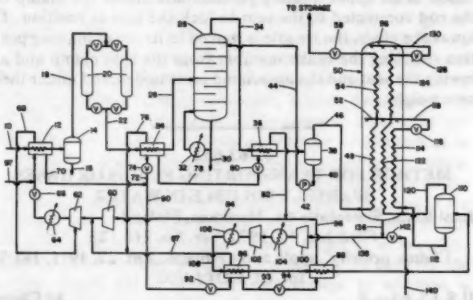


3,763,658

COMBINED CASCADE AND MULTICOMPONENT REFRIGERATION SYSTEM AND METHOD

Lee S. Gaumer, Jr., and Charles L. Newton, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 825,526, May 19, 1969, abandoned. This application Jan. 12, 1970, Ser. No. 2,447
Int. Cl. F25j 1/00, 1/02, 5/00
U.S. Cl. 62—40 12 Claims



A refrigeration system and method are disclosed for liquefying a feed stream by first subjecting the feed stream to heat exchange with a single component refrigerant in a closed, cascade cycle and, thereafter, subjecting the feed stream to heat exchange with a multicomponent refrigerant in a multiple zone heat exchanger forming a portion of a second, closed refrigerant cycle.

3,763,659

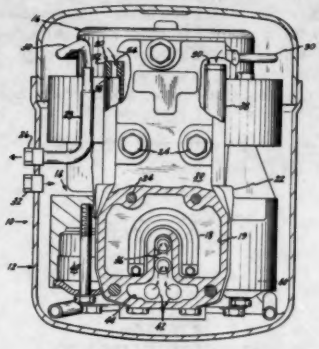
REFRIGERATION PROCESS, APPARATUS AND METHOD

Paul B. Hover, Clinton, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Feb. 2, 1972, Ser. No. 222,733
Int. Cl. F25b 41/06
U.S. Cl. 62—115 27 Claims

A method in which a fixed size orifice is selected and inserted between the evaporator outlet and the suction inlet of a compressor in a refrigeration system to restrict gas flow to the compressor and thereby decrease the peak torque required to operate the compressor. The disclosed apparatus is a hermetic compressor unit with such a calibrated orifice installed in each of the compressor intake tubes, thereby allowing the use of an

electric drive motor which otherwise would be incapable of developing sufficient peak load torque after starting to



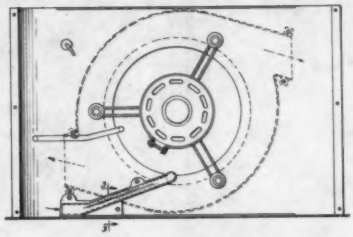
operate the compressor in a refrigeration system with an evaporator at ambient temperature in the absence of such orifices.

3,763,660

AIR CONDITIONING CONDENSER FAN ARRANGEMENT WITH CONDENSATE REMOVAL

Ivan T. Burney, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1972, Ser. No. 259,430
Int. Cl. F25b *4/00*
U.S. Cl. 62—280 **6 Claims**



This invention relates to an air conditioner condenser section which includes a condenser and a low speed, double-exit centrifugal blower having a large diameter fan wheel. The fan wheel speed and velocity of the air passing through the condenser may be kept relatively low to provide a more quiet and efficient operation. Slanted water channel means are also provided to pump, by an aspiration effect, the water that has collected in the bottom pan of the air conditioner and housing to the blower fan wheel for atomization and dispersal.

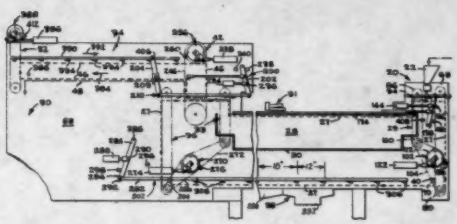
3,763,661

INDEPENDENT MOLD FROZEN CONFECTION MACHINE

Robert J. Betschart, and John S. Brown, both of Sacramento, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Dec. 23, 1971, Ser. No. 211,267
Int. Cl. F25c *1/08*, *1/22*
U.S. Cl. 62—345 **8 Claims**

A frozen confection machine has multiple molds which are not connected to side chains. The molds are advanced at various spacings in an interrupted or step-wise motion from a filling station, through a freezing tank wherein the confection in the molds is frozen, through an extractor section where the molds are defrosted and the frozen confection is moved by means of extractor bars. Thereafter, the molds are lowered independently, inverted and passed through a wash section at increased spacings, prior to return to the filling station. The use



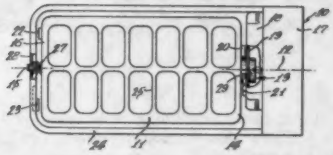
of independent molds permits a substantial reduction in the number of molds required, because since the molds are independent, the mold spacings can be increased during mold return operations outside of the freezing tank.

3,763,662

TWIST TRAY ICE MAKER

Duane C. Nichols, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 2, 1972, Ser. No. 277,325
Int. Cl. F25c *1/10*
U.S. Cl. 62—353 **11 Claims**



An automatic ice maker wherein a tray is rotatable about a horizontal axis. The ice bodies are formed in the tray with the cavities in an upright position, and upon completion of the freezing of the ice bodies, the tray is rotated to an inverted position. While the tray is being rotated, it is caused to be concurrently twisted as the result of an axial movement of the tray to engage stop means at one end of the tray. Cam means are provided at the opposite end to move the tray to engage the stop means and at the end of the twisting operation to disengage the stop means. Means are provided for causing the tray to move axially reversely to disengage the stop means and permit untwisted final movement of the tray through the harvesting, inverted position back to the upright ice-forming position.

3,763,663

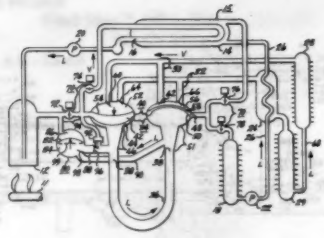
PNEUMATIC POWERED DIAPHRAGM PUMP SYSTEM FOR HEAT TRANSFER

Ralph C. Schlichtig, 11212 3rd. St., Seattle, Wash.

Continuation-in-part of Ser. No. 148,723, June 1, 1971. This application July 31, 1972, Ser. No. 276,787
Int. Cl. F25b *1/00*
U.S. Cl. 62—498 **17 Claims**

A pneumatic diaphragm pump system is employed for converting energy from gaseous power fluid to pump refrigerant vapor for transferring heat. An oscillating liquid column provides inertia for associated diaphragms so that with sequencing valves a cycle of operation is set up in which expansion of

the enclosed gaseous power fluid can efficiently transmit energy to the liquid column to be used to compress refrigerant vapor. Means is provided to protect from liquid hammer effect

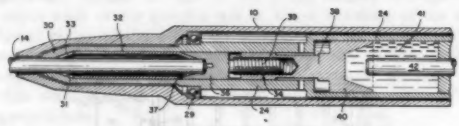


and to allow effectively unequal volume displacement of refrigerant vapor and gaseous power fluid so that large expansion ratios can be used with the gaseous power fluid.

3,763,664
DENTAL HANDPIECE

James M. Stewart, West Palm Beach, Fla., assignor to Stewart Research Inc., West Palm Beach, Fla.

Continuation-in-part of Ser. No. 873,976, Nov. 4, 1969, Pat. No. 3,702,067. This application Apr. 13, 1972, Ser. No. 243,736
Int. Cl. F16c *1/06*
U.S. Cl. 64—4 **7 Claims**

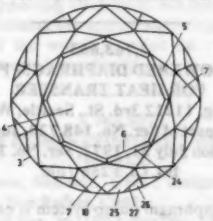


A dental handpiece including a housing and a collet rotatably mounted within the housing having as a force transmitting means a substantially non-compressible, non-fluid, but readily deformable gel confined within an internal chamber of constant volume but of variable shape to transmit gripping forces to the collet to hold the workpiece in the housing.

3,763,665
BRILLIANT WITH OCTAGONAL TABLE AND SURROUNDING TRAPEZOIDAL FACETS

Jules Polakiewicz, Wilrijk, Belgium, assignor to Belamco, Antwerpen, Belgium

Filed Mar. 8, 1971, Ser. No. 121,758
Int. Cl. A44c *17/00*
U.S. Cl. 63—32 **2 Claims**



A brilliant with a crown side and a collar side which connect to one another along an edge circle.

The crown side comprises an octagonal table; along each one of the table sides is located an additional small trapezoidal facet the height of which is at the most equal to one-fifth of the larger base and the lengthwise direction of which is the lengthwise direction of that side to which it connects.

The thirty-two triangular facets of the crown side and of the collar side which are contigous to the edge circle are duplicated.

The collar is subdivided into a middle facet and two side facets.

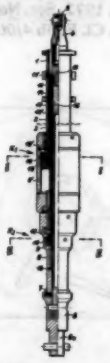
ERRATUM

For Class 64—4 see:
Patent No. 3,763,664

3,763,666
TELESCOPIC DRILL ROD

Fritz Tibussek, Monchengladbach, Germany, assignor to Maschinen-Und Bohrgeratefabrik Alfred Wirth & Co. KG, Erkleng/Rhld, Germany

Filed Nov. 17, 1971, Ser. No. 199,408
Claims priority, application Germany, Nov. 20, 1970, P 20 57 101.1
Int. Cl. F16d *3/06*
U.S. Cl. 64—23 **7 Claims**



A telescopic drill rod has two or more rod parts disposed coaxially to one another, with the inner rod part being axially slidable relative to the outer rod part. The inner rod part by means of a coupling device comprising an abutment on the outer rod part, an abutment on the inner rod part, and a locking element. The locking element is moved into the space between the two abutments by a spring. The locking element is capable of withstanding pressure forces.

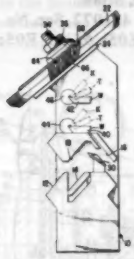
3,763,667
CIRCULAR KNITTING MACHINE WITH PATTERN WHEELS AND ADJUSTABLE CAMS

Lester Mishcon, Miami Beach, Fla., assignor to The Singer Company, New York, N.Y.

Filed May 16, 1972, Ser. No. 253,719
Int. Cl. D04b *15/76*
U.S. Cl. 66—50 A **6 Claims**

A jacquard type circular knitting machine is provided with multi-butt needles and with adjustable needle engageable

cams which may be disposed to raise needles to yarn accepting positions independently of pattern mechanisms and which



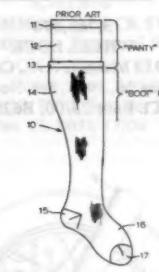
may be used to change the pattern in a cloth knitted on the machine.

3,763,668

METHOD AND CONSTRUCTION FOR FORM FITTING PANTY HOSE

Charlie L. Williams, Wilkesboro, N.C., assignor to Ithaca Textiles, Inc., Wilkesboro, N.C.

Filed Oct. 29, 1971, Ser. No. 193,765
Int. Cl. D04b *11/00*
U.S. Cl. 66—178 A **10 Claims**



An improved panty hose method and construction utilizes a pair of seamless, knit, stretch stockings each of which in the upper portion used for forming the panty is knit with a welt portion followed by an upper panty portion of the same stretch diameter and which is followed by a lower panty portion which abruptly increases in stretch diameter at the juncture of the two portions whereby to produce a form-fitting shape.

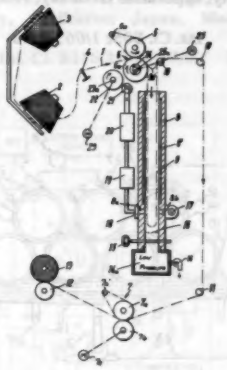
3,763,669

SYSTEM FOR BULKING YARN

Karl Bous; Dieter Rosenkranz, both of Wuppertal-Barmen, and Kurt Gorgen, Neviges, all of Germany, assignors to Firma Rosenkranz & Co. GmbH, Ohler Kirchweg, Germany

Filed Aug. 6, 1971, Ser. No. 169,657
Claims priority, application Germany, Aug. 7, 1970, P 20 39 273.8
Int. Cl. D06c *7/02*; F26b *13/12, 13/30*
U.S. Cl. 68—5 D **13 Claims**

A system for heat-treating a filament, especially for the bulking of yarn in which a loop of the filament is suspended in a hanging condition between a feed point and a take-up point by advancing the filament at said feed point at a rate greater than that at which the filament is withdrawn at said take-up point. The loop is enclosed in a vertical tube substantially out of contact with the vertical walls thereof and the supply of filament within said tube is held substantially constant by controlling the relative speed at which the filament is fed and withdrawn at said points.

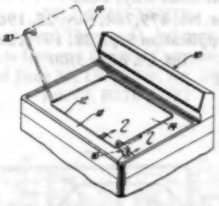


3,763,670

LID LATCH AND INTERLOCK MECHANISM FOR CLOTHES WASHING MACHINES

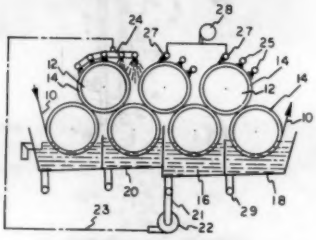
Marshall C. Harrold, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1972, Ser. No. 231,234
Int. Cl. D06f *33/02, 37/28*
U.S. Cl. 68—12 R **4 Claims**



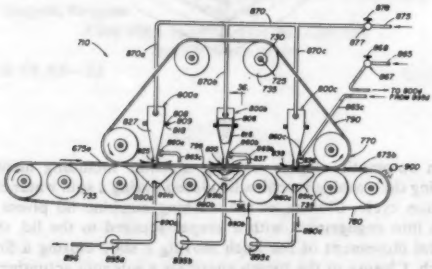
An automatic clothes washing machine including means locking the washing machine lid closed during a spin water extraction cycle. Closure of the washing machine lid pivots a latch into engagement with a keeper secured to the lid, the pivotal movement of the latch moving a slide closing a first switch. Closure of the switch energizes a solenoid actuating a locking arm into engagement with the slide, locking the slide in a lid latched position while also closing a second switch. The second switch is in the spin water extraction circuit and conditions the circuit for operation when that portion of the clothes washing cycle is demanded by an automatic control timer. Means are associated with the first switch opening it when the spin tub is out of balance.

3,763,671
TEXTILE TREATING DEVICE
Gunter Schiffer, and Karl Peter Lopata, both of Krefeld, Germany, assignors to John. Kleinewefers Sohne, Krefeld, Germany
Filed Feb. 8, 1971, Ser. No. 113,553
Claims priority, application Germany, Feb. 6, 1970, P 20 05 350.3
Int. Cl. B05c *1/06, 3/132*
U.S. Cl. 68—85 3 Claims



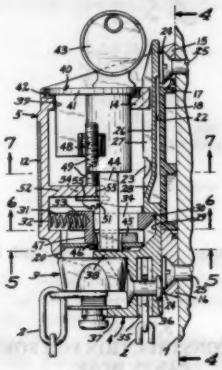
A device for treating endless webs including a plurality of rolls aligned to define a path of travel for the web during treatment such that the web is transferred along the path of each succeeding roll. The improvement comprising the invention includes the use of an outer shell on at least one of the rolls, the shell having annular raised portions defining a plurality of ribs and grooves. Also contemplated is the arrangement wherein the path of travel of the web is defined by alignment of at least three rolls wherein the web travels without an unsupported run between the rolls, and each of the rolls has the annular raised portions defining the plurality of ribs and grooves.

3,763,672
CONTINUOUS RINSING APPARATUS
Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah
Division of Ser. No. 879,764, Nov. 25, 1969, Pat. No. 3,698,214. This application Sept. 28, 1971, Ser. No. 184,572
Int. Cl. B05c *5/00*
U.S. Cl. 68—205 R 5 Claims



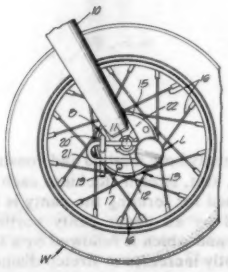
Apparatus by which cloth articles are rinsed by directing a mist of gas and rinse liquid along a path normal to the articles therethrough to prevent puddles of the rinse liquid and the wash solution from forming thereon.

3,763,673
CHAIN DOOR LOCK
Gregory R. Colombo, Stillwater, and Russell W. Waldo, St. Paul, both of Minn., assignors to Ideal Security Hardware Corporation, St. Paul, Minn.
Filed May 4, 1972, Ser. No. 250,120
Int. Cl. E05b *65/06*; E05c *17/36*
U.S. Cl. 70—93 8 Claims



A chain lock for doors, including a housing defining a passage for movement of a locking slide connected to one end of a chain. A latch bolt in the housing is movable toward and away from locking engagement with the slide. A key-equipped lock is mounted in the housing for operating the latch bolt.

3,763,674
WHEEL LOCK
Bruce M. Zahner, 1913 Monoviz Ave., Costa Mesa, Calif.
Filed June 16, 1971, Ser. No. 153,676
Int. Cl. B60r *25/00*; B62h *5/14*
U.S. Cl. 70—226 7 Claims

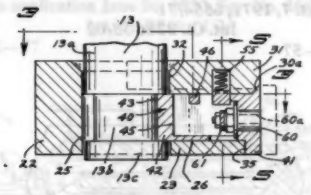


A wheel lock wherein a lock bar has a stem with an eye on one end and a retainer arm on the other end extending at a right angle from the stem, the stem extends through an opening in a wheel hub and the retainer arm is located at the inboard side of the hub, a lock bail extends through the wheel axle and through the eye of the lock bar.

3,763,675
TRAILER LOCK APPARATUS
Robert W. Hofmeister, 2345 W. Old Shakopee Rd., Bloomington, Minn., and Thorwald J. Mickelson, Apt. No. 7-215, 3305 Harbor Ln. North, Minneapolis, Minn.
Filed Feb. 24, 1972, Ser. No. 228,907
Int. Cl. B60r *25/00*; F16b *41/00*
U.S. Cl. 70—232 13 Claims

A tractor having a fifth wheel assembly for towing a semitrailer having a king pin and a lock apparatus to block a

conventional interlocking towing connection between the tractor and trailer, the lock apparatus including a housing having a main body and cover to provide a king pin chamber and a second chamber opening to the king pin chamber, a lock bar reciprocally mounted in the housing second chamber and having a recessed end portion locatable adjacent the reduced diameter portion of the king pin to block removal of the hous-



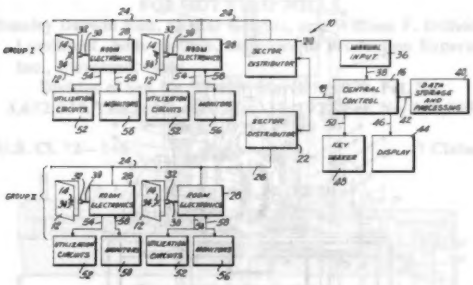
ing from the king pin and a retainer bar receiving slot, a retainer bar mounted by the housing that is resiliently urged downwardly to in part extend through the slot to retain the lock bar in a locking position and a key operated lock mounted by the lock bar and having a key operated cam member for moving the retainer bar upwardly to permit the lock bar being moved to an unlocked position.

3,763,676

PROGRAMMABLE LOCK SYSTEM

Jacob Schachter, Huntington; Zygmund Reich, Dix Hills, and David R. Greenberg, Old Bethpage, all of N.Y., assignors to Instrument Systems Corporation, Jericho, L.I., N.Y.

Filed June 12, 1972, Ser. No. 261,839
Int. Cl. E05b 47/04
U.S. Cl. 70—264 **19 Claims**



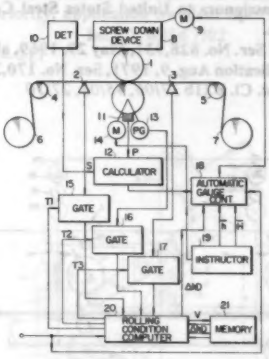
A lock structure is provided with at least first and second portions separated by a parting line, and lock pins positionable relative to said parting line by a properly programmed key to clear said parting line to permit opening of said lock. A remotely actuated programming device in said lock structure is operative coupled to said lock pins for placing said lock pins in a selected configuration. A key making device is provided for selectively forming a key of a configuration coordinated to the configuration of the lock pins as established by said programming device to permit opening of said lock.

3,763,677

AUTOMATIC PLATE-THICKNESS CONTROL METHOD FOR ROLLING MILL

Toshio Mannaka; Hidehiro Kitanosono; Shigemichi Matsuka, and Sadanori Shingai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 17, 1972, Ser. No. 235,588
Claims priority, application Japan, Mar. 19, 1971, 46/15125
Int. Cl. B21b 37/00, 37/02
U.S. Cl. 72—8 **9 Claims**



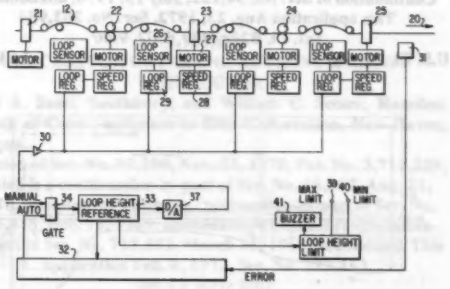
Incoming and outgoing plate-thickness deviations for the same point of a sheet passing through a reduction rolling mill are determined for a plurality of rolling speeds so as to calculate the outgoing plate deviation component attributable to the inherent characteristics of the rolling mill upon deceleration and acceleration, such as changes in the oil film and in the coefficient of friction. The thus determined outgoing plate-thickness deviation component is stored as information corelated to the speed at which it was determined, so that it may be selectively retrieved to be applied as a correction factor in the screw-down of the rolls upon automatic operation at the corresponding speeds of subsequent roll passes.

3,763,678

APPARATUS FOR AUTOMATIC CONTROL OF PRODUCT FILL DIMENSION

Paul E. Dornbusch, and Thomas D. Johnson, both of Roanoke, Va., assignors to General Electric Company, Salem, Va.

Filed June 30, 1972, Ser. No. 268,085
Int. Cl. B21b 37/12
U.S. Cl. 72—9 **7 Claims**



Apparatus for automatic control of the fill dimension of a product formed in a rolling mill by sensing the fill dimension of the finished product and comparing this value to a predetermined reference value to form a resultant error signal. This resultant error signal modifies the height of loops between

successive stands of the mill to vary the product fill dimension. The apparatus includes provision for increasing the gain if successive errors of fill dimension in the same direction are sensed and for decreasing the gain if successive errors in the opposite directions are sensed.

3,763,679

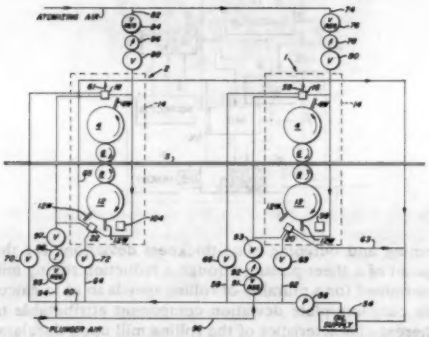
APPARATUS FOR APPLYING LUBRICANT TO A WORKPIECE IN A HOT STRIP MILL

Wesley A. Lane, Provo, Utah; William G. Miller, Penn Hills Township, Allegheny County, Pa., and Robert G. Whitney, Orem, Utah, assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 828,931, May 29, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,353

Int. Cl. B21b *37/00, 45/02, 27/10*

U.S. Cl. 72—14 **11 Claims**



A method and apparatus for applying lubricant to a workpiece in a four-high mill includes the application of an atomized lubricant to the back-up rolls from which it is transferred to the work rolls and then to the workpiece. A sensor detects when the workpiece enters and leaves the work rolls and actuates a control to automatically feed atomizing air and oil to nozzles directed toward the back-up rolls when the workpiece enters the work rolls and shut off the feed when the workpiece leaves the work rolls.

3,763,680

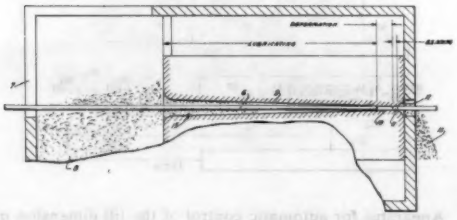
METHOD AND APPARATUS FOR TREATING WIRE

Howard J. Godfrey, Pennington; Stephen W. Homa, Trenton, and Ronald J. Stott, Beverly, all of N.J., assignors to CF & I Steel Corporation, Denver, Colo.

Continuation of Ser. No. 54,122, July 13, 1970, abandoned. This application Aug. 23, 1972, Ser. No. 282,954

Int. Cl. B21c *1/00, 3/02, 9/00*

U.S. Cl. 72—43 **3 Claims**



A method of treating wire, both coated and uncoated, and a wire drawing die which provide improved lubrication of the wire and a lower wire temperature during treatment than have heretofore been obtainable and resulting in a cold drawn wire product having greater tensile strength and core density, considerable increase in cohesive strength and significant improvement in ductility.

3,763,681

TUBE FORMATION AND PRODUCTS FORMED THEREBY

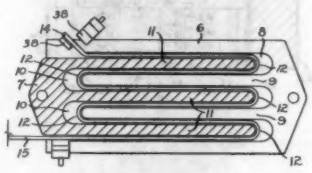
William A. Flintoft, 59 Branson Ave., Clearview, Australia

Filed May 22, 1972, Ser. No. 255,405

Claims priority, application Australia, May 25, 1971, 4993/71; Oct. 7, 1971, 6554/71

Int. Cl. B21d *53/02*

U.S. Cl. 72—57 **7 Claims**



A method of forming thin walled ductile tubes by wetting the inside of a thick walled tube with a liquid and passing the tube between rollers to flatten the tube and simultaneously elongating the tube and reducing the wall thickness thereof, and then applying pressure to the inside of the tube to restore a tubular shape, the tube being preformed into a radiator core or the like prior to the application of pressure and stretched to avoid wrinkling.

3,763,682

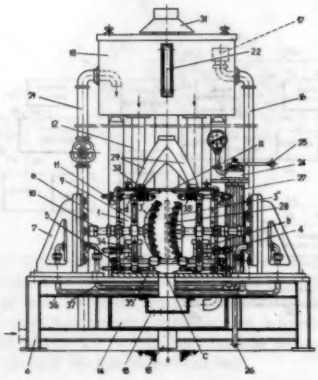
HARDENING MACHINE

Nicolae Macovei, Craiova, Romania, assignor to Uzina Constructii Masini Agricole "NOEMBRIE,", Craiova, Romania

Filed Jan. 24, 1972, Ser. No. 219,984

Int. Cl. B21d *11/22*

U.S. Cl. 72—46 **9 Claims**



A machine for hardening workpieces has a treatment tank formed at its top with an entrance opening for a heated workpiece to be immersed in cooling liquid upon insertion into the tank; a pair of curved gripper jaws are mutually reciprocable inside the tank to engage the workpiece, their displacement toward each other coinciding with a closure of the entrance opening as well as of an inlet and an outlet for the liquid. The inlet and outlet form part of a circulation system including a liquid reservoir above the tank and a catch basin beneath it.

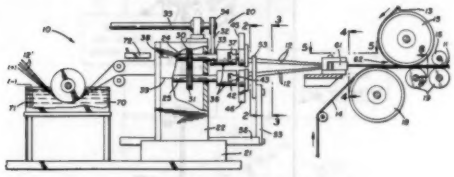
Gases evolving from the liquid in the treatment tank are allowed to escape into an exhaust duct via ports flanking the entrance opening.

3,763,683

HELICALLY FORMED FILAMENTS PARTICULARLY ADAPTED FOR REINFORCING ELASTOMERIC FABRIC, METHOD AND APPARATUS FOR PRODUCING SAME

Sterling W. Alderfer, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Division of Ser. No. 104,602, Jan. 7, 1971, Pat. No. 3,700,012. This application June 26, 1972, Ser. No. 266,306
Int. Cl. B21b *13/20*
U.S. Cl. 72—77 4 Claims



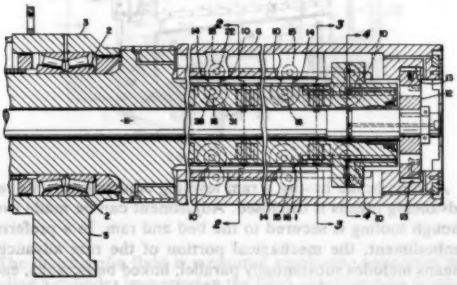
Helical, wire filaments are disclosed that may be encapsulated individually or nested in bundles that are themselves encapsulated within an elastomeric material to provide a reinforced fabric. The method and apparatus by which such filaments are formed pass straight wire, in individual or plural strands, through a bore in a movable working die. Each strand is cold worked around the flared orifice of the bore in the movable die and enters a corresponding bore in a fixed die means. The corresponding bores are eccentric, and the movable die plate is translated such that each bore therein describes an annular path concentrically outwardly of the corresponding bore in the fixed die means. The foregoing apparatus and method are particularly adapted to the manufacture of reinforced, elastomeric fabric, even to the point that, if desired, normally plated wire can be deplated prior to being encapsulated within the elastomer.

3,763,684

DOWNCOILER MANDREL OF THE TOGGLE LINK TYPE FOR HOT STRIP MILLS

Stanley Darwin Noll, Shaker Heights, and William F. Delfeld, Lyndhurst, both of Ohio, assignors to Production Experts, Inc., Cleveland, Ohio

Division of Ser. No. 17,828, March 9, 1970, Pat. No. 3,672,030. This application Mar. 31, 1972, Ser. No. 240,205
Int. Cl. B21c *47/00*
U.S. Cl. 72—148 7 Claims



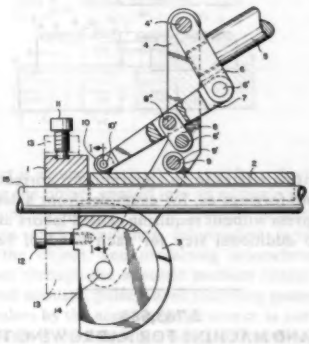
A downcoiler mandrel is described, in which the mandrel segments and mandrel body have recesses or pockets in which semicylindrical bearings are mounted, in which the ends of toggle links are pivotally received. The links are provided with pin areas in which bushings are mounted, and the pins are locked against axial displacement. The bearings and bushings are made of preselected materials. Means are also provided for anchoring the bearings in the pockets or recesses.

3,763,685

TUBE BENDING TOOL

Bengt Fjellstrom, Vadsbrovagen 12, Jarna, Sweden

Filed Nov. 2, 1971, Ser. No. 165,824
Claims priority, application Sweden, Apr. 29, 1970, 5942
Int. Cl. B21d *7/02*
U.S. Cl. 72—217 8 Claims



A tool for bending hollow tubes includes a rotatably mounted bearing element having an abutment element for rigidly grasping the tube. A steering element having a circular periphery is attached to the bearing element. The periphery of the steering element has a non-circular groove. A bending guide having a non-circular groove is positioned over the tube to face the steering element. The two grooves form therebetween a non-circular channel. A handle and a linkage system are connected to the steering element and bending guide to selectively cause the bending guide to be rotated around the periphery of the steering element and to maintain the tube within the channel during the bending.

3,763,686

PROCESS FOR OBTAINING ALUMINUM ALLOY CONDUCTOR

Fred A. Besel, Southbury, and William C. Setzer, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

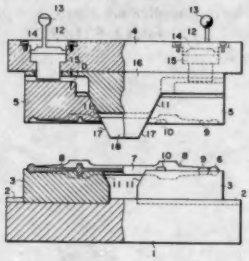
Division of Ser. No. 92,289, Nov. 23, 1970, Pat. No. 3,711,339, which is a continuation-in-part of Ser. No. 66,067, Aug. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 885,315, Dec. 15, 1969, abandoned, which is a continuation-in-part of Ser. No. 715,552, March 25, 1968, abandoned. This application Feb. 4, 1972, Ser. No. 223,753
Int. Cl. B21c *9/02*
U.S. Cl. 72—364 6 Claims

An improved aluminum alloy conductor. The conductor is characterized by a combination of good mechanical and electrical properties and contains from 0.04 to 1.0 percent iron, 0.02 to 0.2 percent silicon, 0.1 to 1.0 percent copper, 0.001 to 0.2 percent boron, balance essentially aluminum.

3,763,687
APPARATUS FOR CORRECTING STRAINS IN STAMP-FORGINGS

Yasumasa Numoto, Yao, and Kyuhei Itaya, Nara, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka City, Japan

Filed Mar. 14, 1972, Ser. No. 234,622
Int. Cl. B21j 13/02
U.S. Cl. 72—392 3 Claims

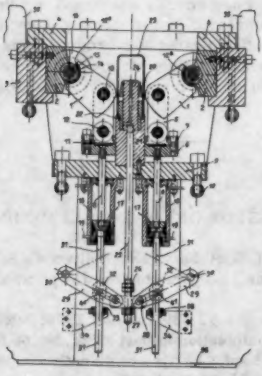


This invention relates to an apparatus for correcting strains in such stamp-forgings as, for example, front axles with one stroke of a press without requiring skilled labors and without requiring an additional step for each bend of heat-treated products.

3,763,688
METHOD AND MACHINE FOR NARROWING TUBULAR ARTICLES

Pierre Cuq, Firminy, France, assignor to Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, France

Filed Mar. 19, 1971, Ser. No. 126,203
Claims priority, application France, Mar. 20, 1970, 7011359
Int. Cl. B21d 51/02
U.S. Cl. 72—402 5 Claims

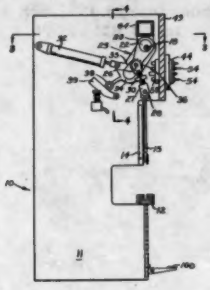


This method and machine for narrowing tubular articles comprise the steps of and machine for fitting the tubular article on a blank holder which is provided with a core slidably mounted on the holder and a plurality of die-forming radial sectors pivoted about horizontal pivot pins and shaped so as to be adapted to produce with their inner contours the desired narrowing of the article.

3,763,689
MULTI-PURPOSE SHEET METAL FOLDING PRESS, PUNCH, AND NIBBLING MACHINE

Denis Richard Bridges, Wingfield, South Australia, Australia, assignor to B & R Products Proprietary Limited, Wingfield, South Australia, Australia

Filed Aug. 11, 1971, Ser. No. 170,695
Claims priority, application Australia, Aug. 20, 1970, 2268
Int. Cl. B21j 9/20
U.S. Cl. 72—441 14 Claims

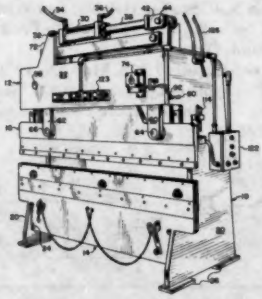


A brake press or the like having an operating shaft with a crank thereon and a connecting rod between the crank and the movable die holder. The connecting rod is articulated at a knee between its ends, and having a hydraulic cylinder operatively connected to the knee of the connecting rod to impart primary motion to the movable die holder. Rotation of the operating shaft imparts secondary motion to the die holder. Adjustable stop means are provided to limit primary motion.

3,763,690
PRESS BRAKE RAM LEVELING

Joseph A. Kirincic, Evergreen Park, and Raymond J. Heitner, Oak Lawn, both of Ill., assignors to Dreis & Krump Manufacturing Co., Chicago, Ill.

Filed Apr. 17, 1972, Ser. No. 244,577
Int. Cl. B21j 9/18
U.S. Cl. 72—447 5 Claims



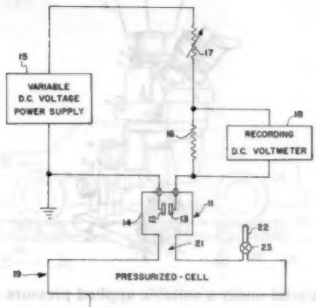
A press brake having a ram leveling adjustment in its ram advancing means is disclosed. Adjustment can be made even though tooling is secured to the bed and ram. In a preferred embodiment, the mechanical portion of the ram advancing means includes substantially parallel, linked bell cranks, each having a pivot, and at least one of the pivots inludes an eccentric pivot pin which can be rotated to a desired position for ram leveling adjustment. Preferably the orientation of the eccentric pivot pin is adjusted, and secured after adjustment, by means of a manually operable gear system which is self-locking with respect to forces applied at the pivot pin.

3,763,691

METEOROID DETECTOR

Leonard R. McMaster, Williamsburg; Sheldon T. Peterson, and Frank M. Hughes, both of Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 27, 1971, Ser. No. 184,090
Int. Cl. G01w *1/08*; G01n *15/00*
U.S. Cl. 73—12 3 Claims



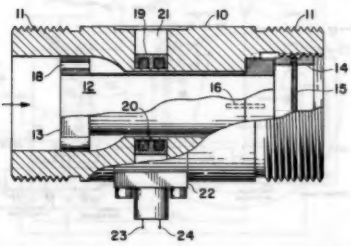
Use of a cold-cathode discharge tube with a gas-pressurized cell in space for recording a meteoroid puncture of the cell and for determining the size of the puncture.

3,763,692

MEASURING OF FLUID DENSITY

Joram Agar, Hampshire, England, assignor to Joram Agar & Company Limited, Hampshire, England

Continuation of Ser. No. 744,711, July 15, 1968, abandoned.
This application Apr. 5, 1972, Ser. No. 241,470
Claims priority, application Great Britain, July 26, 1967, 34,378/67
Int. Cl. G01n *9/00*
U.S. Cl. 73—32 15 Claims



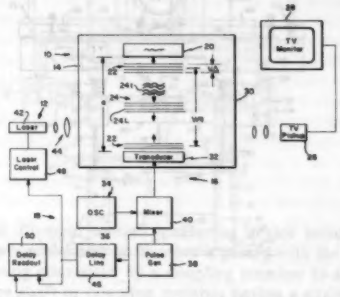
The density of a fluid is measured employing apparatus including a cylinder immersed in the fluid, together with driving and pick-up means operating to resonate the cylinder at its natural frequency as affected by the fluidic medium; the apparatus described has the drive and pick-up coils located external to the resonating cylinder so that they are free of the fluidic medium.

3,763,693

PULSED ACOUSTO-OPTICAL ECHO IMAGING METHOD AND APPARATUS

Pravin G. Bhuta, Torrance, and Robert Aprahamian, Marine Del Rey, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 30, 1972, Ser. No. 258,057
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 14 Claims



An object is acousto-optically imaged by reflecting acoustic pulses from the object imaged into an acoustic wave transmission medium to produce in the medium reflected acoustic wave pulses each containing information representing an image of the object, and projecting monochromatic light-beam pulses through the acoustic medium across the path of the reflected acoustic pulse waves following generation of the acoustic pulses by the acoustic pulse source in such a way that the light-beam pulses undergo Bragg diffraction by reflected acoustic pulse waves from the object to produce optical images of the object corresponding to the image information contained in the acoustic wave pulses. The described application of the invention involves inspection of a work part for subsurface internal flaws and measuring the subsurfaces depth of any flaws by varying the time delay between each acoustic pulse and the following light-beam pulse until a flaw is imaged and measuring the time delay of the beam pulses which image the flaw.

3,763,694

ULTRASONIC INSPECTIONS USING POLYMERIC MATERIALS AS COUPLANTS

Richard P. Rathburn, Richmond, and Garth M. Stanton, Pinole, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 20, 1969, Ser. No. 809,029
Int. Cl. G01n *24/00*
U.S. Cl. 73—71.5 5 Claims

A process is disclosed for making ultrasonic inspections of high surface temperature objects by using a polymeric material as a couplant. The polymeric materials are specifically defined in terms of thermal characteristics. Surface temperatures of the object at the point of inspection may be 300° – 1,100° F. or higher.

3,763,695

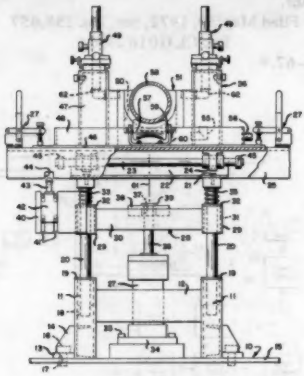
ULTRASONIC TESTING DEVICE

Donald L. Zeiters, Shelby, Ohio, assignor to Copperhead Steel Company, Pittsburgh, Pa.

Filed Jan. 12, 1972, Ser. No. 217,370
Int. Cl. G01n *29/04*
U.S. Cl. 73—71.5 U 10 Claims

The specification discloses an ultrasonic testing device for non-destructively testing electrically welded steel tubing. The device comprises a mechanical mounting arrangement for one or more ultrasonic transducers which automatically tracks the

path of movement of steel tubing through the device to insure substantially uniform positioning of the transducers with respect to the tubing notwithstanding deviations in the path of movement of the tubing. The device includes a box having a



pair of aligned sealed openings through which the tubing passes, and in which the tubing and the ultrasonic transducers may be immersed in water which serves as a couplant for transmission of sound waves emitted from the transducers to the tubing and reflected back to the transducers.

3,763,696

APPARATUS FOR DETERMINING THE INTRAOCULAR PRESSURE

Carl Erik Torsten Krakau, Bengt Lidforssvagl, S 223 65 Lund, Sweden

Filed Sept. 15, 1971, Ser. No. 180,593

Claims priority, application Sweden, Sept. 15, 1970, 12525/70

Int. Cl. A61b 9/00

U.S. Cl. 73—80 **5 Claims**

An apparatus for determining the intraocular pressure is described which involves use of a probe contacting the eye and caused to carry out mechanical oscillations under the influence of a generator. The reactional pressure yielded by the eye when subjected to the oscillations of the probe is determined by means of a pressure-sensitive device connected between the generator and the probe.

3,763,697

METHOD AND APPARATUS FOR DETERMINING STRESS

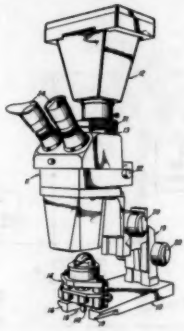
Rolland G. Sturm, Huntsville, Ala., assignor to Sturm Stress, Inc., Denver, Colo.

Filed Apr. 15, 1970, Ser. No. 28,601

Int. Cl. G01n 3/40

U.S. Cl. 73—88 R **16 Claims**

A method and apparatus for non-destructively determining the total stresses in a body wherein an indentation is made in the surface of the solid body and the internal stresses determine the contour of the resulting permanent indentation as opposed to the contour of the indentation that would have remained if there were no stresses in the body. The difference in such coutours is analyzed to determine the amount of stresses and the orientation of such stresses without the physical destruction of the solid body. The material itself will indicate the total stresses (residual plus load) in the surface of the material, by the characteristics of the deformation or flow



of the material under a suitable applied pressure substantially normal to the surface. The apparatus includes an indentor having a carriage and a plunger moveably carried by the carriage. The plunger is provided with a prescribed contoured tip; and a prime mover, capable of applying the same force successively to the plunger, is provided to drive the plunger. A profilometer which can be mounted on the carriage for alternate use with the plunger, reads the contour created by the tip and compares the same with similar indentations made in an unstressed sample.

3,763,698

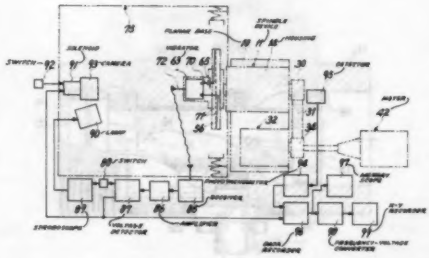
ROTATING OBJECT BREAKAGE TEST APPARATUS

Ikuo Suzuki, Chiryu, and Tomoyasu Imai, Kariya, both of Japan, assignors to Toyoda Kobi Kabushiki Kaisha, Aichi-ken, Japan

Filed May 31, 1972, Ser. No. 258,356

Int. Cl. G01n 3/00

U.S. Cl. 73—88 R **10 Claims**



Rotating object breakage test apparatus for testing the strength and recording the mode of breakage of a rotating object. The object is mounted upon a spindle supported by gas bearings and is located within a dark shelter. An electrical conductor connecting an electric source with an electric vibrator is fixed upon the object so that when the object is broken by the centrifugal force applied thereto,the conductor is also cut or broken in order to stop the electric supply to the vibrator. By detecting interruption of the electric supply, the exact instant of the breakage of the rotating object is

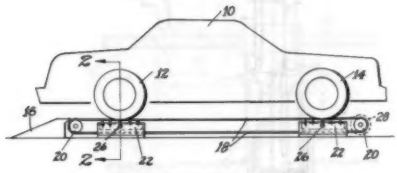
recorded,whereby the strength of the rotating object is detected by recording the rotational speed thereof, while the mode of breakage thereof is recorded upon a photograph.

3,763,699

GAS SUPPORTED FREE RUNNING BELTS FOR TESTING OPERATIONAL CHARACTERISTICS OF ENGINE DRIVEN VEHICLES SUPPORTED ON THE BELTS

Arlon G. Sangster, c/o Decitek, a Div. of Jamesbury Corp., 15 Sagamore Rd., Worcester, Mass.

Filed June 23, 1969, Ser. No. 835,585
Int. Cl. G01l 3/26
U.S. Cl. 73—117 5 Claims



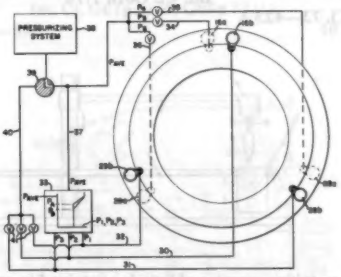
A pair of parallel belts upon which the wheels of a vehicle are to be mounted, so that the wheels may turn while the vehicle is held stationary, and plenum chambers arranged under the belt and providing air under pressure impinging upon the belt under each wheel.

3,763,700

HYDRAULIC THRUST INDICATOR FOR ROTATABLE SHAFT

John MacDonald, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,600
Int. Cl. G01l 5/12
U.S. Cl. 73—140 7 Claims



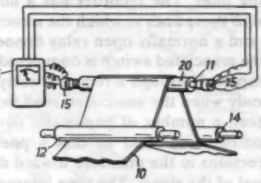
A thrust indicator for a steam turbine rotor which measures the axial force of the thrust bearing housing against the outer casing while the rotor is rotating. Oppositely acting hydraulic load cells are interposed between the thrust bearing housing and the outer casing around the housing. A hydraulic pressurizing and pressure measuring system is used to determine thrust when desired. The load cells are dimensioned and constructed to carry the thrust load without pressurization when the system is inactive.

3,763,701

WEB TENSION DEVICES

Graham Lennox Wright, 59 Hillfield Drive, Heswall, and George Richard Ward, Warren Point, Warren Drive, Wallasey, both of England

Filed July 5, 1972, Ser. No. 269,182
Claims priority, application Great Britain, July 5, 1971, 31,393/71
Int. Cl. G01l 5/04
U.S. Cl. 73—144 3 Claims



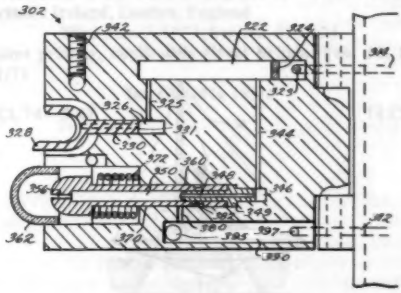
A web or filament tension measuring device including a shaft over which the web or filament is passed with the end of the shaft being connected by a coupling member to a frame member, the shaft or coupling member having a stress zone. The web or filament is held in such a manner as to produce a web or filament tension load component on the shaft which acts on the stress zone, which component is passed to stress sensing transducing means responsive to stresses and therefore representative of the tension in the web or filament. The stress sensing transducing means comprises a cylindrical carrier with stress responsive elements constructed on opposite sides of the cylindrical carrier.

3,763,702

ENDS DOWN MONITORING

Raymond D. Joy, Clarksville, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed July 9, 1970, Ser. No. 53,624
Int. Cl. B65h 63/02; G08b 5/06
U.S. Cl. 73—160 12 Claims



A pneumatic device, particularly for detecting an ends down condition on a spinning frame, having a piston member with a passageway connecting its rear to an enclosed region at its front and movable in a bore of a housing rearward against a spring when a low pressure signal is applied to the device and communicated to the enclosed region via the passageway. In one embodiment, the piston member grips a movable electrode in its rear position and, as it returns forward after the signal is removed, drags the electrode forward against a spring to connect it to a stationary electrode and produce an electrical pulse and further generates pneumatic pulses by its forward and rear movements. In another embodiment, a valve stem blocks a passageway venting a chamber to the atmosphere when the end is up so that pressure is communicated to the region at the front of the piston member which

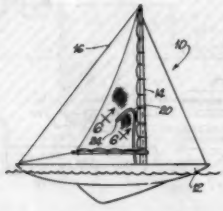
moves rearward away from a transparent bezel and when the end is down the chamber is vented and the piston member moves forward until the colored front of the piston member is visible through the bezel. In yet another embodiment, the yarn itself blocks the passageway. In another embodiment, the ends down detector includes a pivotable member which engages the yarn at one end and has a magnet mounted on its other end so that when the yarn comes down the magnet moves adjacent a reed switch which is closed thereby. In one system a number of such reed switches are each connected to a unique combination of data lines and a recorder for each switch is likewise connected to the lines. The recorder has a normally closed relay connected to those lines to which the associated switch is not connected and a normally open relay connected to those lines to which the associated switch is connected so that a current path is completed through a recorder relay via all of the relay switches only when the associated reed switch is closed. In another system, a number of pneumatic devices are connected to a common manifold so that a pneumatic signal travels both directions in the manifold toward devices for detecting the arrival of the signal. The time interval between the arrival of the signal at the first device and the arrival at the second indicates the position of the pneumatic device producing the signal and accordingly the particular device producing the signal. In one embodiment, the arrival of the signal at the first device causes a wheel to begin rotating and sequentially connecting to a number of fixed contacts. The arrival of the signal at the second device causes an electrical signal to be coupled to the fixed contact to which the wheel is connected at that time. In a second embodiment, the arrival of the signal at the first device causes a pneumatic logic to sequentially move through a number of stages so that the stage activated at the time of arrival at the second device indicates the pneumatic device which produced the signal.

3,763,703

APPARATUS FOR TRIMMING SAILS

Jerome V. Man, 3377 Old Mill Rd., Highland Park, Ill.

Filed Mar. 10, 1972, Ser. No. 233,608
Int. Cl. G01c *21/00*
U.S. Cl. 73—182 **2 Claims**



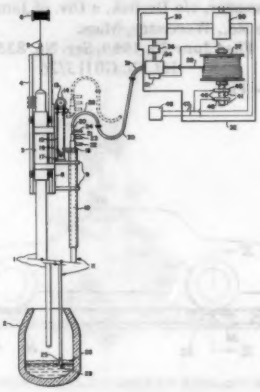
A pressure-sensitive device is provided for aiding a sail-boat skipper in trimming a sail for maximum efficiency and speed. The device includes air-pressure sensors located on opposite sides of the sail and means for comparing the pressures so that the sail may be trimmed to provide a maximum pressure differential. In one embodiment the sensors are a pair of static tubes, each having one end operatively associated with one side of the sail and the other end in communication with a housing having a flexible diaphragm which moves in response to change in the difference in air pressure on opposite sides of the sail. The diaphragm is coupled to a dial-type indicator for indicating these changes.

3,763,704

APPARATUS FOR CONTINUOUSLY MEASURING THE TEMPERATURE OF MOLTEN METAL

Philip Blau, 1740 Elderslee Rd., Pittsburgh, Pa., and George J. Zellner, 326 King of Arms Dr., Greensburgh, Pa.

Filed Apr. 28, 1972, Ser. No. 248,742
Int. Cl. G01k *7/08, 1/14*
U.S. Cl. 73—359 **10 Claims**



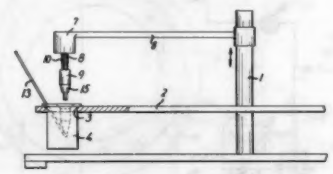
A longitudinally movable thermocouple cable contains a pair of laterally spaced thermocouple wires having exposed ends at the leading end of the cable. The cable is fed forward into a body of molten metal by variable speed means to generate an electric signal in the cable. The speed of the feeding means is controlled by servo means responsive to this electric signal to cause the feeding means to feed the cable into the metal at a rate that will substantially equal the rate at which the leading end of the cable is consumed by the molten metal. The electric signal also operates means that continuously registers the temperature of the metal.

3,763,705

DEVICE FOR TAKING SAMPLES OF THE CONTENTS OF CAPILLARY TUBES

Carl S. Strande, 100 Haven Ave., Tower 3, Apt. 31 F, New York, N.Y.

Filed Feb. 14, 1972, Ser. No. 225,876
Int. Cl. G01n *1/14*
U.S. Cl. 73—423 A **8 Claims**



When taking samples of liquids contained in capillary tubes a block is used having a first bore of a diameter corresponding substantially to the external diameter of the capillary tubes and a second bore of a greater diameter. The two bores terminate in the block at the same position where they are in communication with each other. The capillary tube is introduced into the first bore and sealed in relation to the block and a suction tube is introduced into the second bore, where this tube is also sealed in relation to the block, which functions as a coupling member between the capillary tube and the suction tube the ends of which are very close to each other in a very small cavity within the block. Sealing rings may be

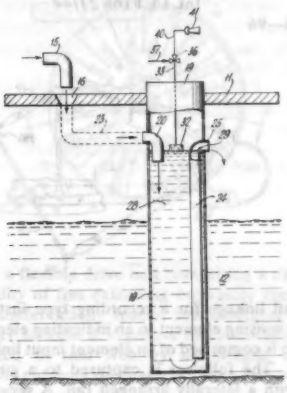
present in the bores or the block may be of an elastic rubber-like material, whereby this material in itself provides the required sealing.

3,763,706

METHOD AND APPARATUS FOR DETERMINING A FLUID CONTAMINANT

Laurence M. Hubby, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Apr. 2, 1971, Ser. No. 130,690
Int. Cl. G01n *9/00, 9/36*
U.S. Cl. 73—452 7 Claims



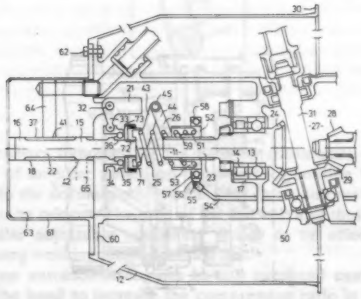
A U-tube arrangement has a float on the inlet leg level of fluid therein. The outlet leg has a predetermined discharge level, and the float actuates an alarm to indicate when oil appears in the inlet leg.

3,763,707

GOVERNOR ASSEMBLIES

David Roberts McMurtry, 21 Stoney Stile Road, Alveston, England

Filed May 3, 1972, Ser. No. 250,044
Claims priority, application Great Britain, May 15, 1971, 15,184/71
Int. Cl. G01p *3/16*; G05d *13/12*
U.S. Cl. 73—535 10 Claims



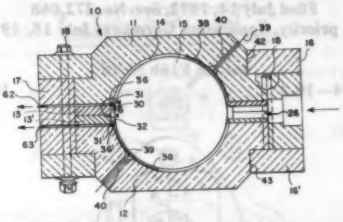
A rotatable governor assembly which includes an epicyclic gear to impart to the governor spring a rotation opposite in direction and equal in speed to that of the bobweights so that the governor spring remains stationary relative to earth.

3,763,708

CRYOGENIC GYROSCOPE HOUSING

Wilhelm Angele, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 13, 1972, Ser. No. 262,430
Int. Cl. G01c *19/12*
U.S. Cl. 74—5.7 10 Claims



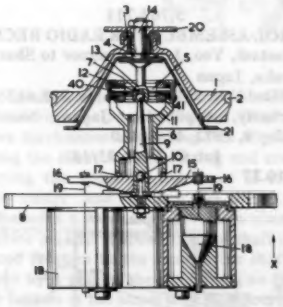
A cryogenic gyroscope housing having gas spin-up means provided in annular discs inserted between housing shells. A circumferential recess in the inner edges of the discs at their juncture serves as the gas spin-up channel, and recesses in the discs at their junctures with the shells form suction channels. The discs also have inlet and outlet ports communicating with the spin-up channel and exhaust slots communicating with the suction channels. Mating surfaces of the discs and housing shells are held in position by optical contact at the equatorial plane of the housing. Suspension electrodes and thin-film readout loops are disposed in the shells. A centering band and clamp rings provide for proper alinement and placement of parts in formation of optical contact joints.

3,763,709

GYROSCOPE PRECESSING APPARATUS

George Thomas Eynon; Terry Shoesmith, both of Farnborough, and Desmond Leonard Ernest Standen, Church Crookham, near Aldershot, all of England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 7, 1972, Ser. No. 223,274
Claims priority, application Great Britain, Feb. 16, 1971, 4,741/71
Int. Cl. G01c *19/46*
U.S. Cl. 74—5.47 14 Claims



Gyroscope precessing apparatus having a gyroscope mounted external to a gimbal system has gyroscope precessing forces applied to structure adjacent to a combined centre of inertia of the gyroscope and centre of rotation of the gimbal system. The forces are applied through a system of levers actuated by force motors, such as solenoids, capable of applying

large forces. The geometry is such that precession of the gyroscope over its full range requires only small relative movements between parts of the force motors.

3,763,710

DEVICE FOR LIMITING ROTATION

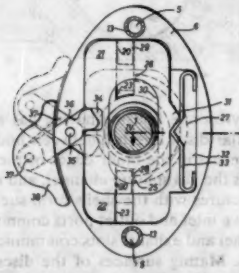
Herbert Kouth, Schoneck-Kilianstadten; Fritz Marr, Offenbach/Main, and Rudolf Roos, Bischofsheim/Hanau, all of Germany, assignors to H. T. Golde GmbH, Frankfurt/Main, Germany

Filed July 14, 1972, Ser. No. 272,068

Claims priority, application Germany, July 15, 1971, P 21 35 359.2

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.2 10 Claims



For limiting the rotational or angular movement of a drive spindle about its axis, such as in a rotary drive for the sliding roof of a motor vehicle, abutments or stops are associated with the driving spindle and with a slide movably displaceable relative to and transversely of the drive spindle, for effecting the limiting action. The drive spindle extends through a housing and the slide is movably positioned within the housing. An eccentric disk is fixed to the drive spindle and a ring is rotatably mounted on the disk and has teeth on its circumferential periphery. An arcuate portion of the teeth on the ring intermesh with teeth formed in the housing. Due to the eccentricity of the disk and ring, during each 360° turn of the drive spindle there is a displacement of the ring relative to the housing. Abutment surfaces are provided on the ring extending toward the slide. The slide is displaceable between two positions and has a pair of abutments so that in each of its positions one of its abutments is located in the path of the abutment surfaces on the ring. When the abutment surface on the ring contacts the abutment on the slide further angular movement of the drive spindle in a particular direction is prevented.

3,763,711

CONTROL ASSEMBLY FOR RADIO RECEIVER

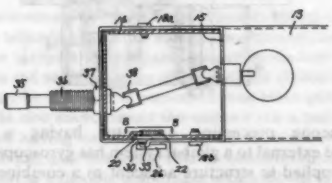
Koichiro Yotsutani, Yao, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 3, 1972, Ser. No. 303,613

Claims priority, application Japan, Nov. 5, 1971, 46/104628; May 9, 1972, 47/54040

Int. Cl. F16h *35/18*

U.S. Cl. 74—10.27 10 Claims



Disclosed herein is an adjustable control assembly for an automobile radio receiver to provide simple alignment of shaft center positions on the receiver with respect to apertures in the dashboard of an automobile. The radio receiver is generally provided having adjustably mounted volume and tuning control shafts at both ends of the front plate of the housing thereof. These shafts are attached to a frame, which may be moved through a rack and pinion engagement to slide in a lateral direction within the receiver housing, thereby the volume control shaft and the tuning control shaft being so correctly positioned in the apertures in the dashboard.

3,763,712

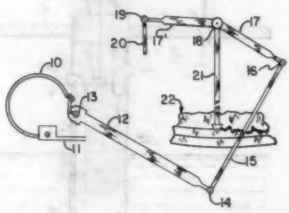
INSTRUMENT CONTROL LINKAGE

Nolan Smiley, Jr., P. O. Box 916, McCamey, Tex.

Filed Feb. 8, 1972, Ser. No. 224,461

Int. Cl. F16h *21/44*

U.S. Cl. 74—96 8 Claims



A control linkage for a recording type instrument which connects a sensing element to an indicating element. The control linkage is comprised of an element input link which moves a follower. The follower is captured to a guide means associated with a laterally arranged rail. A second follower is captured within the guide means of a second rail, with the two followers being connected together by an interconnecting link. An output link connected to the second follower actuates the indicating element.

A sensor element pivotally moves the element input link which in turn causes pivotal movement of the output link by means of the control linkage. The accuracy attained with the control linkage is much greater than that of the prior art bell crank system.

3,763,713

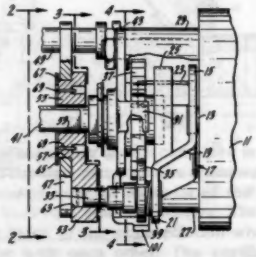
ROTARY SOLENOID RATCHET SWITCH

Frederick M. Ford, Carpentersville, and Robert L. Harvey, Dundee, both of Ill., assignors to Oak Electro/Netics Corp., Crystal Lake, Ill.

Filed Jan. 19, 1972, Ser. No. 218,954

Int. Cl. F16h *27/02*

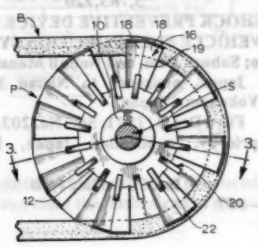
U.S. Cl. 74—128 6 Claims



A rotary solenoid-ratchet switch. Upon energization of the solenoid, a drive pawl is moved into engagement with a tooth of a ratchet. As the drive pawl moves through a rotary stroke, it also moves axially. The pawl imparts only a rotary motion to the driven ratchet. When the drive pawl ends its stroke, it is

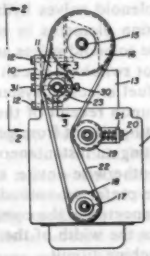
prevented from being disengaged from the driven ratchet by a stop. Upon return of the pawl to its starting position, it is cammed out of engagement with the ratchet by a cam arm. An interrupting switch for the rotary solenoid is operated by movement of the pawl.

3,763,714
GRIP PULLEY
Manfred Kahmann, 1520 ½ Birchwood, Chicago, Ill.
Filed Dec. 20, 1971, Ser. No. 209,925
Int. Cl. F16h *55/36*
U.S. Cl. 74—230.3 7 Claims



A pulley for a flexible drive belt comprising a circular web having a plurality of fins extending outwardly therefrom arranged in circumferentially spaced sets diverging outwardly from each other to form a V-groove therebetween and each being connected to said web by an integral reinforcing member partially cut from the material of the web and the fin.

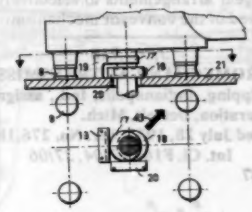
3,763,715
AUXILIARY TIGHTENER FOR FAN BELTS ON AUTOMOBILE ENGINES
Michael H. Pollard, 5957 Calico Ln., Canfield, Ohio, and Robert G. Donnan, 143 N. Navarre Ave., Youngstown, Ohio
Filed Mar. 30, 1972, Ser. No. 239,683
Int. Cl. F16h *7/10*
U.S. Cl. 74—242.1 A 3 Claims



An auxiliary tightener for fan belts on automobile engines consists of an idler pulley on a movable mounting bracket located in the normal path of a fan belt on an automobile engine so as to relocate the path of the fan belt and thus enable the regular adjustable tensioning device to be effective in maintaining working tension on said belt.

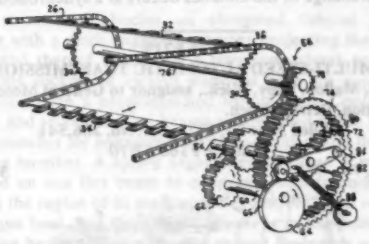
In some automobile engines having overhead cam shafts milling the head to increase the compression ratio in the engine results in lowering the cam shaft to a position where the usual fan belt which drives the cam shaft, is incapable of maintaining proper frictional engagement with the drive pulleys of the engine. On such engines the use of the auxiliary tightener enables the cam shaft to be properly driven and the timing of the engine to be set as desired.

3,763,716
VIBRATIONLESS MACHINE
Folke Ivar Blomberg, Lidingo, Sweden, assignor to Husqvarna Vapenfabriks Aktienbolag, Huskvarna, Sweden
Filed Feb. 15, 1972, Ser. No. 226,633
Int. Cl. F16f *15/00*
U.S. Cl. 74—604 7 Claims



The invention is mainly characterized by the use of movement mechanisms providing a motion of a machine body relatively a base structure which motion is intended to imitate a circular path of a common center of gravity of a piston-crank-mechanism in the machine and to be assimilated by elastic means between the machine body and the base structure moreover, the mechanisms could execute a pendulum moment in the movement plane of a connecting rod in the piston-crank-mechanism in a direction opposed to the pendulum moment of inertia of the connecting rod.

3,763,717
DIFFERENTIAL DRIVE MECHANISM
Franz N. Lenoir, and Jean Van Gyseghem, both of Marcinelle, Belgium, assignors to Miller Printing Machinery Co., Pittsburgh, Pa.
Filed Jan. 14, 1972, Ser. No. 217,867
Int. Cl. F16h *37/00*, *35/02*
U.S. Cl. 74—679 4 Claims



Cutter and creaser apparatus that cuts and creases sheets and thereafter strips the cutout portions from the sheet includes a drive mechanism that is capable of either intermittently stopping the sheet for the cutting and creasing operations or varying the speed of the sheet as it is conveyed through the cutter and creaser apparatus. The drive mechanism includes a drive shaft driven at constant velocity by suitable drive means. A speed control shaft is mounted in parallel spaced relation to the main drive shaft and is connected thereto by a pair of meshing gears so that the speed control shaft rotates at the same angular velocity as the drive shaft. A sun gear of a planetary gear assembly is connected to the drive shaft for rotation therewith and meshes with a planet gear that, in turn, meshes with the internal toothed portion of the ring gear. The external toothed portion of the ring gear meshes with a drive gear for the press sheet conveyor shaft on which a pair of drive sprockets are mounted in spaced relation to each other. A lever is pivotally connected to the drive shaft

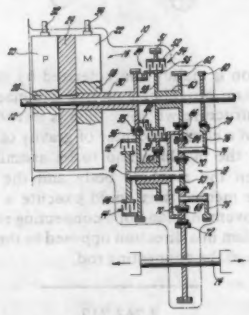
intermediate its end portions and has one end portion connected to the planet gear. The other end portion has a cam follower mounted thereon that is maintained in abutting relation with the cam surface of a cam secured to and rotatable with the speed control shaft. The cam upon rotation pivots the lever and moves the planet gear. The angular velocity of displacement of the planet gear through the lever determines the relative velocity of the sheet conveyor. Another embodiment includes bevel gear arrangements to selectively decrease and increase the speed of the conveyor mechanism.

3,763,718

HYDROMECHANICAL TRANSMISSION

Roderick G. Tipping, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed July 28, 1972, Ser. No. 276,180
Int. Cl. F16h *47/04, 37/06*
U.S. Cl. 74—687 **6 Claims**



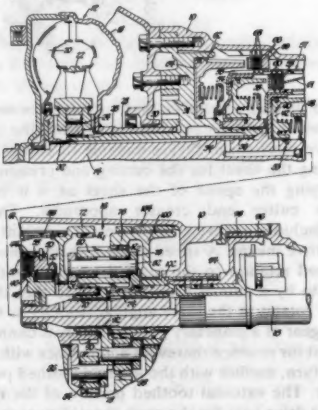
A hydromechanical transmission providing a hydrostatic drive in low range and a hydromechanical drive in high range. The output of the hydrostatic portion drives a pair of clutches, one of which is selectively engageable to provide a drive to the transmission output and the other is selectively engageable to provide an input to a planetary gear set which combines the hydrostatic drive with a mechanical input which combined drive is directed to the transmission output. The shift point for the interchange of the clutches occurs at a synchronous speed point.

3,763,719

MULTI-SPEED AUTOMATIC TRANSMISSION

John D. Malloy, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 27, 1972, Ser. No. 266,541
Int. Cl. F16h *57/10*
U.S. Cl. 74—761 **3 Claims**



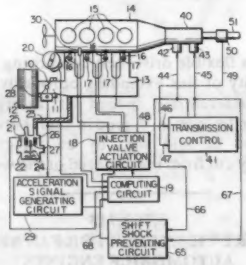
A multi-speed automatic transmission having two friction clutches and three friction brakes, all of which are selectively operable to provide a plurality of speed ratios between an input and output shaft through a compound planetary gear set. The gear set includes a pair of sun gears, a pair of ring gears and a plurality of pinion gears which mesh with the sun and ring gears and are rotatably mounted on a carrier which is drivingly connected to the output shaft. The ratio of the pitch diameters (R_1/R_2) of the ring gears and the ratio of the pitch diameters (S_1/S_2) of the sun gears are both greater than one (1.00). The steps between the speed ratios are such as to provide substantially equal output speed steps at a constant input upshift speed.

3,763,720

SHIFT SHOCK PREVENTIVE DEVICE FOR MOTOR VEHICLE FUEL INJECTION SYSTEM

Shigeo Aono; Saburo Usui, and Nobuji Manaka, all of Yokosuka City, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 1, 1971, Ser. No. 203,606
Claims priority, application Japan, Dec. 31, 1970, 45/123484
Int. Cl. B60k *21/00*
U.S. Cl. 74—857 **6 Claims**



A shift shock preventing device to be incorporated into a fuel injection system of a motor vehicle having an automatic transmission, which device comprises a differentiator electrically connected to solenoid valves hydraulically coupled to the transmission friction elements in order to generate an upshift signal when the solenoid valves are energized to effect upshift, and a transistor switching circuit connected to a computing circuit of the fuel injection system and adapted to be rendered conductive upon receipt of the upshift signal to incapacitate the computing circuit from generating an injection pulse, thereby preventing an instantaneous increase in engine speed which would otherwise invite a shift shock during upshifting. In another preferred embodiment, the transistor switching circuit is connected to the computing circuit in such a manner as to reduce the width of the injection pulse upon conduction of the switching circuit.

3,763,721

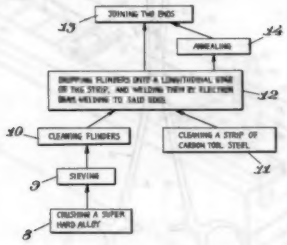
METHOD OF PRODUCING A BAND SAW BLADE

Toshiei Funakubo, Odawara, Japan, assignor to Kabushiji-Kaisha Eishin, Tokyo, Japan

Division of Ser. No. 80,389, Oct. 13, 1970, abandoned. This application Oct. 6, 1972, Ser. No. 295,734
Int. Cl. B23d *65/00;* **B24d** *3/02*
U.S. Cl. 76—112 **5 Claims**

A strip of carbon tool steel is joined at both ends thereof to form an endless band and flinders formed by crushing a molded and sintered super hard alloy are brazed by hard solder or welded by electron beam welding at random to one of the two longitudinal edges of said band so that the flinders project radially outwardly from said edge, and provide sharp edges and corners which work as cutting teeth, and form, with

the band, a band saw blade. Some of said flinders extend from the edge transversely to the plane of the strip and project outwardly to such a distance that saw dust produced during the cutting operation can clear the path of cut of the saw blade.

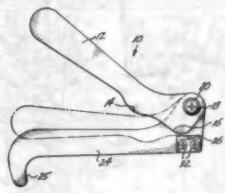


3,763,722

GRIPPING AND PULLING TOOL FOR RETRACTING GUIDE TAPES FROM CONDUIT WHILE PULLING ELECTRICAL WIRES INTO THE CONDUIT

Rudolph D. Ehrens, 1301 Cooley Rd., Woodburn, Oreg.

Filed Dec. 21, 1971, Ser. No. 210,318
Int. Cl. B25b 7/04, 25/00; B65h 59/28
U.S. Cl. 81—3 J 1 Claim



A guide tape used by an electrician to pull a group of electrical wires through a conduit is held firmly by using this hand tool to grip the guide tape, without damaging it in any way. The body of the tool serves both as a lower hand gripping handle and an upstanding mounting portion. An upper hand gripping pivotal handle is secured by using an adjustable eccentric bushing fastener assembly located in the upstanding mounting portion of the body. This upper hand gripping pivotal handle along its lower edge has a downwardly protruding convex portion spaced a distance away from the location of the eccentric bushing fastener assembly. Secured to the body below the upstanding portion are both a spacer block and a guide plate held by another fastener assembly.

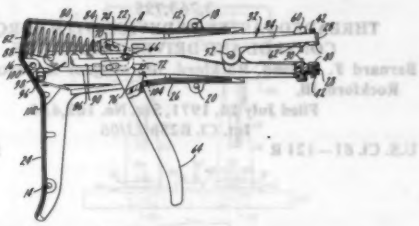
When the handles are pivoted apart, the tool is positioned so the guide tape is orientated in alignment with the lower handle and it rests on the spacer block between the guide plate and the upstanding mounting portion of the body. Upon moving the handles together, the guide tape is held firmly between the handles below the mounting location of the upper handle, and also the guide tape is deflected by convex portion of the upper handle to further enhance the overhaul gripping capability of the hand tool by utilizing the inherent spring action of the steel guide tape.

3,763,723

WIRE STRIPPER

Johannes A. E. Oprins, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Oct. 7, 1970, Ser. No. 78,796
Int. Cl. H02q 1/12
U.S. Cl. 81—9.5 A 7 Claims



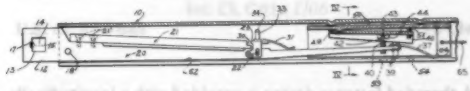
This is a wire stripper of the so-called pistol-grip type and is concerned with removing the insulation from wire by a linear or straight-line motion so that the wire itself will not be flexed or arched or nicked as the slug of insulation is removed.

3,763,724

AUTOMATIC TORQUE RELEASE WRENCH OF THE PRESET TYPE

Talmage O. Green, Schaumberg, Ill., assignor to Snap-On Tools, Corporation, Kenosha, Wis.

Continuation-in-part of Ser. No. 826,578, May 21, 1969. This application July 26, 1971, Ser. No. 166,003
Int. Cl. B25b
U.S. Cl. 81—52.4 R 10 Claims



The structure embodies an elongated tubular handle member with a work engaging member projecting therefrom at one end thereof to provide a transverse shank to which detachable sockets of various standard sizes are applied to turn fasteners to a predetermined torque load. Confronting primary and secondary flex beams are disposed in the tubular handle member for engagement with each other and the work engaging member. A spring urged trigger release is movably mounted on one flex beam to cooperate with the other flex beam in the region of its maximum flex responsive to resisting the torque load, and this trigger release is in the path of the other flex beam end to normally engage therewith until the trigger moves with the flex of both beams to engage the internal wall of the tubular handle member, thereby mechanically releasing its connection therewith so that the load in the primary beam momentarily equals the combined bending load originally sustained by both primary and secondary beams. A calibrated multiple scale slide fitted with a pivotal ramp cooperates with the spring urged primary beam end to preset the release of the secondary beam relative to the trigger latch connection therebetween at any applied turning load within the capacity range of the torque wrench as preset on any scale of the calibrated slide which is viewed through openings on both sides of the tubular handle member serving also as a housing for the instrumentalities. When the applied load equals the preset value on the calibrated scale, the trigger latch engages the inside wall of the housing, thereby releasing the secondary beam which causes an audible signal and also a sudden relaxation of part of the applied force or torque to create a momentary interruption which effects a mild vaibratory shock and an audible click due to the trigger latch discon-

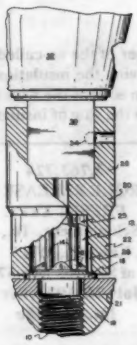
nect between the beams to notify the user that the preset load has been reached. The user then stops applying any further turning load, and this momentary release will permit the spring urged trigger latch and the primary beam to re-connect the parts for further application of the wrench to another fastener.

3,763,725

THREADED FASTENER DEVICE WITH TORQUE CONTROL AND DRIVER THEREFORE

Bernard F. Reiland, Rockford, Ill., assignor to Textron Inc., Rockford, Ill.

Filed July 14, 1971, Ser. No. 162,454
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R **5 Claims**



A threaded fastener device is provided with a longitudinally uniform multi-lobular driving cross section characterized by a shearing zone where lobes are sheared off at a substantially predetermined value of applied torque employed for seating the fastener device. The portion of the lobes remaining is capable of sustaining sufficient torque for effecting removal of the seated fastener device. A driver, forming a torque control system with the fastener device, is constructed to engage only the aforementioned shearing zone for severing the lobes within such zone while leaving the aforementioned remaining portion which may be engaged by a second driver for removal of the said fastener device.

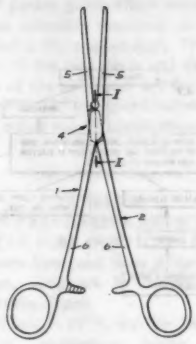
3,763,726

FORCEPS, PLIERS OR THE LIKE AND METHOD OF PRODUCING THE SAME

Hans Gunter Hildebrand, Am Schilt, Germany, assignor to Aesculap Werke Aktiengesellschaft vormals Jetter & Scheerer, Tuttlingen, Germany

Filed Dec. 8, 1971, Ser. No. 206,023
Claims priority, application Germany, Dec. 15, 1970, P 20 61 539.8
Int. Cl. B25b *7/06*
U.S. Cl. 81—416 **13 Claims**

A forceps or similar tool having two arms pivotably connected to each other by a box lock comprising a male lock member on one arm and a female lock member on the other arm, forming a longitudinal slot, the male lock member extending through the slot and having a transverse bearing bore or coaxial bearing recesses in its opposite sides, and the walls of the slot being pressed against the opposite surfaces of the male member with such a force that the material of the slot walls starts to flow and a part thereof passes into the bore or the recesses and forms therein studs together serving as a pivot pin which therefore does not extend through the walls of the slots but only projects from these walls and integrally therewith into the bearing bore or recesses.

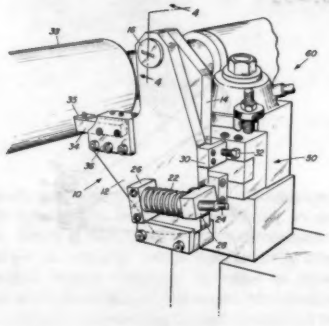


3,763,727

SPRING LOADED ECCENTRIC TURNING TOOL

William A. Hoke, 517 Overdale Rd., Baltimore, Md.

Filed Oct. 12, 1971, Ser. No. 188,118
Int. Cl. B23b *29/14*
U.S. Cl. 82—36 R **7 Claims**



A device is provided that is used on a lathe for holding a cutting tool. It is designed to follow any eccentricities encountered when working with off-center rollers.

3,763,728

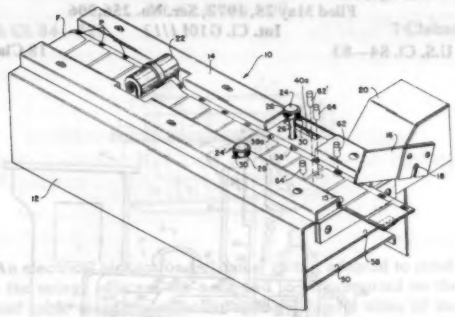
BIMODAL FILM CUTTER ADAPTED TO HANDLE DIFFERENT FILM WIDTHS

Robert J. Blackman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1972, Ser. No. 222,862
Int. Cl. B26d *5/34*
U.S. Cl. 83—210 **15 Claims**

A film cutter adapted to sever individual customer orders of varying film types, i.e., different width and perforation spacing, from a continuous film roll into a number of segments. Each film type has regularly spaced perforations of a particular pitch along one edge thereof. Depending upon the mode of operation (whether the splice frame leads the individual customer orders or trails the orders) the perforations may enter the cutter on alternate sides. A plurality of pin arrangements, one for each operational mode and film type, are provided to lock the film in position and initiate cutting. Depending upon the location of the film perforations and the widths of

the film, a proper pin arrangement is selected. At the time at which it is desired to make a cut in the film, the selected pin arrangement is caused to engage the film for insertion within



the next following perforation. The insertion of the pin will activate switches which stop the film drive and actuate the film cut-off knife to accomplish the desired film cutting.

3,763,729

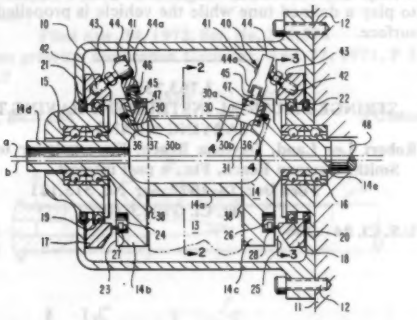
WEB EDGE MARKING APPARATUS AND METHOD

David Franklin Ashby, East Orange, N.J., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1971, Ser. No. 182,789

Int. Cl. B26d *5/20*

U.S. Cl. 83—355 **10 Claims**



Successive spaced cuts, notches, imprints or other marks are made along the edges of a moving web by members that are driven with harmonic motion by conversion of rotary motion to reciprocating motion. As the web moves onto and partially around a drive roll that carries the marking members, the latter are reciprocated in paths extending obliquely toward the roll axis from outboard of the web edges. At least one ring eccentrically encircling the roll outboard of the web is driven from the roll at constant angular velocity by cam and follower means. Each ring is connected by a ball-in-socket-like connection with the outer ends of the associated members to reciprocate the members with a stroke corresponding to the degree of eccentricity of the ring relative to the roll.

3,763,730

OPTICAL HOLE FILM PUNCH

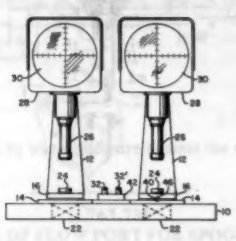
Otto A. Ahlegian, 22570 Morton Ave., Fairview Park, Ohio

Filed Jan. 27, 1972, Ser. No. 221,215

Int. Cl. B26d *7/16*

U.S. Cl. 83—521 **6 Claims**

A bed is provided having an aperture which is a female die with a light source below the aperture. A projecting microscope is mounted over the aperture and a marked film may be moved over the aperture so that an image of a place where a hole is to be punched is magnified on a screen. The film may then be clamped and a punch inserted through the aperture hole and punch a hole in an exact location on the



film. This hole may then be used in conjunction with a guide pin to locate a second hole to thus provide two accurately located holes on the film. There may be two projectors located on a single base to enable larger magnification and to produce holes of different shape.

3,763,731

ADJUSTABLE ATTACHMENT DEVICE IN A MICROTOME

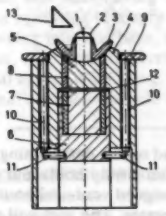
Karl-Erik Wistedt, Jakobsberg, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Dec. 14, 1971, Ser. No. 207,932

Claims priority, application Sweden, Dec. 30, 1970, 17725/70; Nov. 19, 1971, 14796/71

Int. Cl. G01n *1/06*

U.S. Cl. 83—648 **12 Claims**



The purpose of the present invention is to provide in a microtome an adjustable attachment for the specimen holder or for the knife, whereby the attachment is designed in a way that the adjustment can be accomplished in two planes at the same time without altering the distance between the specimen and the knife during the adjustment.

3,763,732

PUNCH PRESS

Bernd-H. Stursberg, Ennepetal, Germany, assignor to Paul Ferd. Peddinghaus, Gevelsberg, Germany

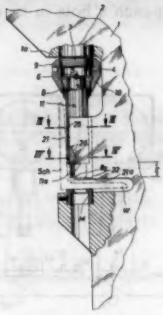
Filed July 6, 1972, Ser. No. 269,307

Int. Cl. B26d *5/08;* **B23b** *29/04*

U.S. Cl. 83—635 **12 Claims**

A punch press, especially for punching holes into small angle profiles, which is provided with a sleeve partly arranged in the press frame, the sleeve basically having a round cross section and being rotatable about its longitudinal axis. The sleeve has at least on one side thereof a section decreasing in

diameter and has adjacent sleeve sections reciprocably guided in a bore provided in the punch press frame and open along



one side of said frame so as selectively to allow removal of the sleeve therethrough.

3,763,733

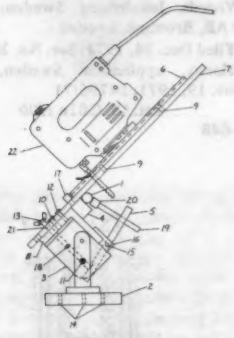
AUTOMATIC GRAVITY SAWING

Dorothy E. Jambor, 2157 Marne Ave., Milwaukee, Wis.

Filed Dec. 29, 1970, Ser. No. 68,862

Int. Cl. B27b *27/06, 19/08*

U.S. Cl. 83—766 **1 Claim**



An angle, feed and speed, determining fixture for a portable power saber saw that firmly holds and guides the saw while performing its assigned cut—without the assistance or presence of an operator. The tool will automatically stop at the end of it's cut and the motor will also stop, with a limit switch conveniently located at the end of the cut. A motor speed control, located in the saber saw or on the fixture, maintains the proper speed for cutting different types of material while in operation. Once the material to be cut has been (set up) in this fixture, the only moving part is the complete power tool, created with the aid of gravity and friction plus the weight of the power tool as it slides down the guides of an inclined table. The angle of the table with the flanged guides, determines the "feed of the cut." The "speed" is controlled by either the speed control built into the power tool or one that is an integeral part of the Automatic Gravity Sawing Fixture. The motivating power is gravitational feed. A single operator can therefore operate a multitude of Automatic Gravity Sawing Fixtures, depending on the compositional nature of the material being cut. A pine two-by-four can be cross cut sawed in about 45 seconds when the table angle is set at about 45° with the proper size blade installed in the saber saw. Naturally, angle iron or iron bar stock needs a slower feed and speed, so, the adjustment must be made accordingly. All correlationship between speed and feed is left to the discretion of the operator.

3,763,734

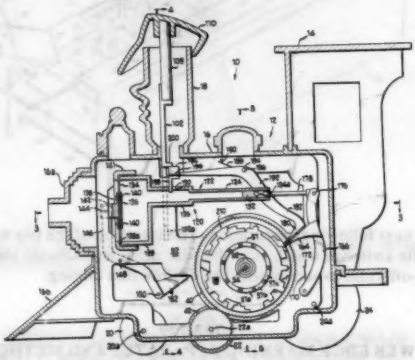
MUSICAL TOY

Burton C. Meyer, Downers Grove, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed May 25, 1972, Ser. No. 256,906

Int. Cl. G10f *1/12*

U.S. Cl. 84—83 **18 Claims**



A toy vehicle including a whistle therein, and a drive means connected to a means for propelling the vehicle and further being connected to structure associated with the whistle for supplying air to the whistle and varying the pitch thereof so as to play a defined tune while the vehicle is propelled along a surface.

3,763,735

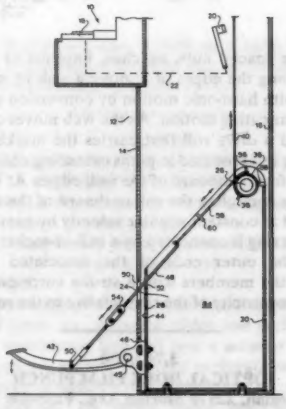
STRINGED MUSICAL INSTRUMENT HAVING TONE-VARYING MEANS

Robert Lee Land, Daytona Beach, Fla., assignor to Horace Smith, Daytona Beach, Fla., a part interest

Filed Dec. 14, 1972, Ser. No. 315,121

Int. Cl. G10c *3/10*

U.S. Cl. 84—200 **8 Claims**

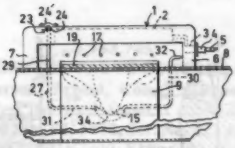


A stringed musical instrument having keyboard-actuated hammers for striking strings. Means are carried by the instrument for varying the tone of the strings.

3,763,736
ELECTRICAL PICKUP FOR GUITAR AND COMBINATION

Connie E. Williams, 1180 Lytle Rd., Yuba City, Calif.

Filed Feb. 5, 1973, Ser. No. 329,711
Int. Cl. G10h 3/00
U.S. Cl. 84—329 7 Claims

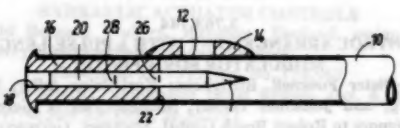


An electrical pickup for a classical guitar, adapted to straddle the strings adjacent the neck and to be supported on the sound table at points adjacent opposite lateral sides of the heel, with the microphone portion of the pickup extending over said strings at a location approximately midway between the nut and bridge. A quick releasable securing element on the pickup is in releasable engagement with and extending below the neck, and also with the table along an edge of the hole, releasably holds the pickup in the aforesaid position on the guitar, and a jack on the pickup electrically connected with the microphone provides for a detachable jack plug that is connected with an amplifier. The guitar itself is not altered in any manner to apply or remove the pickup.

3,763,737
CYLINDRICAL FLUTE

Erich Sandner, 3547 Wolfhagen, Schutzenberger Str. 19, Germany

Filed Apr. 24, 1972, Ser. No. 246,574
Claims priority, application Germany, Apr. 22, 1971, P 21 19 616.7
Int. Cl. G10d 7/02, 9/00
U.S. Cl. 84—384 3 Claims



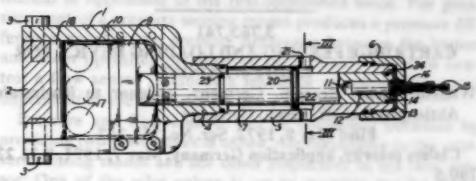
The specification describes a flute with a cylindrical bore whose blowing end is closed by a transverse wall at or behind the embouchure (the labial in the case of a recorder-type flute or the blowing hole in the case of a transversely blown flute). The flute is provided with means for correcting the sound of the flute so as to obtain the pure tonality which would otherwise not be obtained owing to the cylindrical bore of the flute.

3,763,738
EXPLOSIVELY OPERATED DEEP WATER TOOL

Ernest E. Temple, Murrysville, Pa., assignor to Mine Safety Appliance Company, Pittsburgh, Pa.

Filed July 3, 1972, Ser. No. 268,569
Int. Cl. B26d 5/12
U.S. Cl. 89—1 B 6 Claims

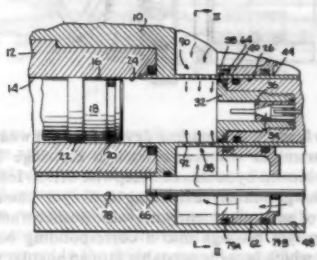
A piston is slidably mounted in the opposite end portions of a barrel, the central portion of which is spaced from the piston. Mounted on the front end of the piston is an operating member, such as a cable cutter. The rear end of the barrel is provided with means for firing an explosive charge to drive the piston forward. A collar is joined to the piston and slidably engages the wall of the central portion of the barrel. This wall has openings through it behind the collar so that water pressure against the front end of the piston will be at least partly counterbalanced by water pressure against the rear face of the collar.



3,763,739
HIGH RATE OF FLOW PORT FOR SPOOL VALVES

Douglas Pray Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Filed June 1, 1971, Ser. No. 148,833
Int. Cl. F41f 1/04
U.S. Cl. 89—7 2 Claims

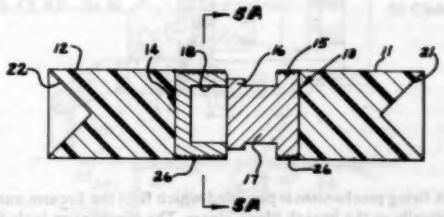


A feature of this invention is a spool valve which has a spool with an O-ring seal, said seal having a given longitudinal dimension, the spool operating in a bore in a housing to open and close a port opening into said bore, said port formed of a plurality of apertures, each aperture having a diameter, parallel to the longitudinal axis of said O-ring, which is smaller than said given longitudinal dimension of said seal.

3,763,740
COLLAPSIBLE PISTONS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Robert N. Teng, Torrance, Calif.

Filed July 27, 1971, Ser. No. 166,487
Int. Cl. F41f 1/00
U.S. Cl. 89—8 5 Claims



A piston assembly for use in a hypervelocity gun comprising a forward cylindrical section longitudinally spaced from a rearward cylindrical section by an intermediate section. The

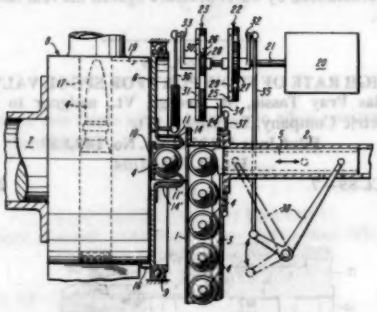
intermediate section is longitudinally collapsible when subjected to a predetermined force, to allow the distance between the forward and rearward sections to be suddenly reduced.

3,763,741

CARTRIDGE FEEDING AND LOADING DEVICE FOR LIGHT WEAPONS

Wilhelm Rieke, Bremen, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany

Filed May 8, 1972, Ser. No. 251,247
Claims priority, application Germany, May 7, 1971, P 21 22 780.5
Int. Cl. F41d 9/02
U.S. Cl. 89—33 A 9 Claims



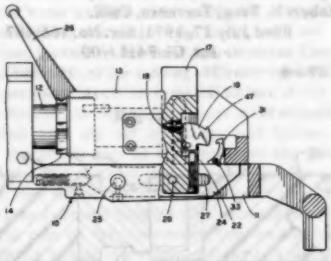
A cartridge feeding and loading device for light weapons, in which the cartridges withdrawn from a cartridge belt are adapted to be moved by means of a stepwise driven follower in a stationary longitudinally extending conveyor passage and are by means of an intermittently movable pusher transferable from the conveyor passage into a corresponding bore of a rotatable disc which latter is rotatable into an angular position which corresponds to the elevational position of the weapon and thereby of the weapon magazine. In this last mentioned position of the transfer disc the pusher transfers the cartridge from the transfer disc into the magazine.

3,763,742

FIRING MECHANISM FOR FIREARM

John A. Kotas, Chicago Heights, and James V. Slattery, Oak Forest, both of Ill.

Filed June 30, 1972, Ser. No. 267,963
Int. Cl. F41f 11/02, 13/04
U.S. Cl. 89—24 9 Claims



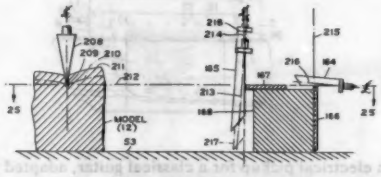
A firing mechanism is provided which fires the firearm automatically as the breech block closes. The mechanism includes a hammer-engaging sear which is provided with a cam laterally offset from the sear, the cam being positioned above the operating arm for closing the breech block. As the operating arm is pivoted to close the breech block, it engages the cam and moves the sear to release the hammer.

3,763,743

APPARATUS FOR MAKING MASTER MODELS

Thomas D. Vertin, 37540 Lake Shore Rd., Mt. Clemens, Mich.

Division of Ser. No. 864,650, Oct. 8, 1969, Pat. No. 3,640,182.
This application June 17, 1971, Ser. No. 154,210
Int. Cl. B23c 1/16
U.S. Cl. 90—13 B 2 Claims



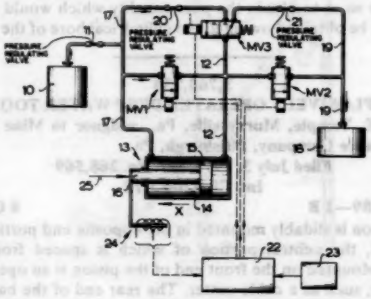
An apparatus for carrying out the automatic machining of three-dimensional lines and surfaces for making a master model comprising three components which are controlled to move in a straight line, including an X-component which has a horizontal longitudinal X-movement, a Y-component which has a vertical Y-movement, and a Z-component which has a horizontal Z-movement at 90° to the X-movement, a tool operatively mounted on one of said components, power means operatively connected to each of said three components for moving the components in said controlled straight line movements, a signaling device for each of two of said components for controlling the power means therefor, a first source of two-dimensional data mounted on one plane, and a second source of two-dimensional data mounted on another plane perpendicular to said one plane, and a sensing element for each of said signaling devices which engages and is responsive to one of said two-dimensional data sources, whereby the power means controlled by the signaling devices cause their respective connected components to move precisely in accordance with the two-dimensional data, thereby producing a three-dimensional relative movement between the tool and the work piece.

3,763,744

CONTROL ARRANGEMENT WITH A PULSE-LENGTH MODULATOR FOR A PISTON

Hans-Dieter Fournell, Bietigheim; Karl-Heinz Adler, Leonberg, and Johannes Locher, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 11, 1971, Ser. No. 128,607
Claims priority, application Germany, Mar. 12, 1970, P 20 11 713.9
Int. Cl. F15b 15/17, 9/03, 9/09
U.S. Cl. 91—20 16 Claims



A servo loop for correcting the position of a piston operating against a load has a control unit comprising a three point

regulator for operating two on-off valves and a pulse length modulator for operating a switch over valve, the on-off and switch over valves being connected to the piston cylinder, a pressure tank, and a collection tank, so as to move the piston in either of two directions. The three point regulator and the pulse length modulator are driven by the difference between the desired signal and the actual signal, the latter being obtained from an inductive displacement pickup coupled to the piston rod.

3,763,745

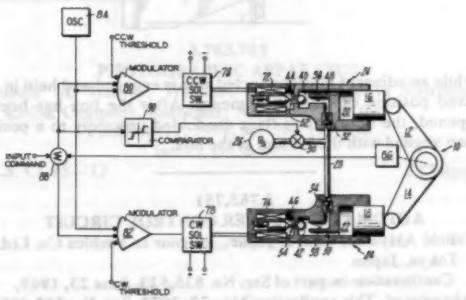
CLOSED CENTER VALVE CONTROL SYSTEM

Joseph J. Andersen, Bristol, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Jan. 28, 1972, Ser. No. 221,652

Int. Cl. F01b *1/00*; F15b *9/03, 9/09*

U.S. Cl. 91—186 **13 Claims**



An actuator system wherein on-off solenoid operated valves of piston type actuators are controlled so as to establish a dead band. The control valves are energized by time variable width pulses generated by modulator means responsive to input position information and threshold bias signals which determine the dead band.

3,763,746

HYDRAULIC ACTUATOR CONTROLS

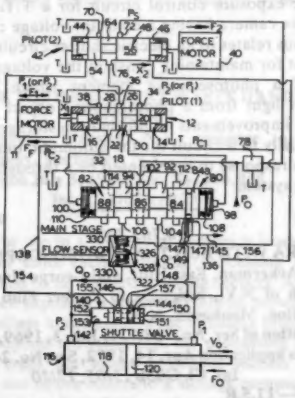
Ronald Bernard Walters, Wembley, England, assignor to Sperry Rand Limited, London, England

Filed Sept. 13, 1971, Ser. No. 179,997

Claims priority, application Great Britain, Oct. 6, 1970, 47,349/70; July 23, 1971, 34,557/71

Int. Cl. F15b *11/10, 13/043*

U.S. Cl. 91—433 **8 Claims**



A device for controlling the pressure of fluid applied to or the flow of fluid to a hydraulic actuator comprises a pilot valve for controlling a pressure operated main valve. A transducer converts an electrical input signal into a force which is applied to the pilot valve spool. A feedback pressure is applied to piston means on or associated with the spool to apply a force thereto in opposition to the first-mentioned force. For pressure control a pressure sensing means produces a pressure difference equal to the pressure difference between the higher and lower operating pressures of the actuator. For flow control a flow sensor produces a feedback pressure differential dependent on the flow of fluid to the actuator.

Pressure and flow control can be optionally obtained by providing two pilot valves in series, one responsive to the pressure sensing means and the other responsive to the flow sensor. One of the pilot valves is set to override the feedback signal thereto, whereby the other pilot valve becomes effective as desired.

3,763,747

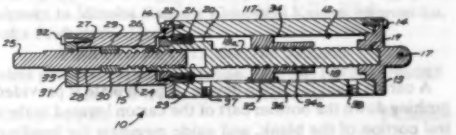
FLUID-OPERABLE LINEAR ACTUATORS

Rudi Beichel, and Clifton J. Reynolds, both of Sacramento County, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed June 28, 1971, Ser. No. 157,296

Int. Cl. F01b *3/00*; F16h *21/44*

U.S. Cl. 92—33 **11 Claims**



A linear actuator according to the present disclosure includes an axially reciprocable piston having means controlling the radial position of the piston. Means is provided for imparting fluid pressure to opposite sides of the piston causing the piston to move axially. The piston is threadably engaged to a drive means so that axial movement of the piston imparts rotation movement to the drive means. An axially moveable thrust rod is threadably assembled to the drive means so that rotation of the drive means imparts axial motion to the thrust rod. In one form of the device, the piston is threadably engaged to the thrust rod which in turn is restrained from rotational movement. The piston is also threadably engaged to a sleeve which rotates with the piston, the sleeve being threadably engaged to the thrust rod so that radial movement of the sleeve drives the thrust rod axially. In another form of the device the piston is keyed to a key slot in a cylindrical bore, the key slot being helically wound so that the advance of the thrust rod is dependent upon the algebraic sum of the advance of the threaded assembly and the advance of the helical key slot.

3,763,748

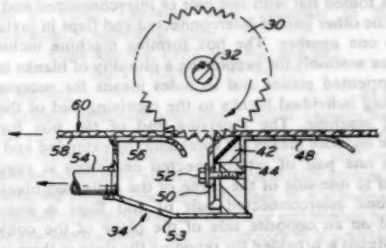
CORRUGATED PAPERBOARD SLITTER

William Gallagher, Jr., Clementon, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 18, 1972, Ser. No. 254,554

Int. Cl. B26d *1/20*; B31b *1/18*

U.S. Cl. 93—36 M **10 Claims**



A corrugated paperboard slitter has slitting blades which cooperate with and have an interference fit with an expenda-

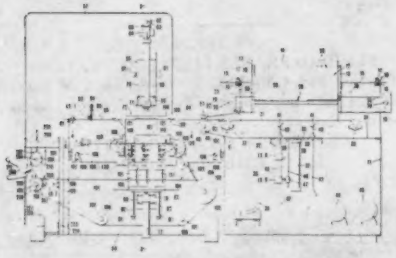
ble anvil. The anvil is preferably made in sections so that portions thereof may be discarded and replaced as needed.

3,763,749

AUTOMATIC CARTON CASE MANUFACTURING DEVICE

Tetsuya Sawada, No. 35-24 Chiyohara-cho, Katsura, Ukyo-ku, Kyoto-shi,, Japan

Filed June 10, 1971, Ser. No. 151,725
Int. Cl. B31b *1/44*
U.S. Cl. 93—51 R **7 Claims**



A carton manufacturing device. A push plate is provided for pushing down the bottom part of the carton located in the central portion of the blank, and guide members for bending the side walls and the end walls are positioned around the edges of the blank. The sequence of operation is such that pieces located at the ends of the end walls are bent upward before the side walls and end walls are bent upward. Guide rods are disposed outside the guide members for bending the end walls to bend pieces at the ends of the side walls upward before the side walls are bent upward. Parallel receiving plates are provided which support the lower surface of the bottom of the blank board while being lowered and raised during the bending operations. A plurality of turnable bending pieces are provided near the guide members to fold the side walls and end walls double by bending downwardly and inwardly the upper halves of the side walls and the end walls. A conveyor is provided for conveying the carton from the receiving members to the exit when the carton is completed after the bending operations as above described.

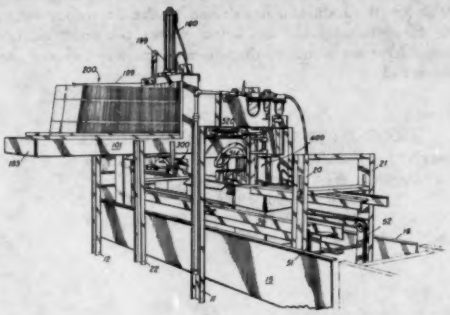
3,763,750

BOX FORMING MACHINE

Donald G. Reichert, Tarpon Springs, Fla., assignor to ABC Packaging Machine Corporation, Largo, Fla.

Filed Feb. 1, 1972, Ser. No. 222,617
Int. Cl. B31b *1/76*
U.S. Cl. 93—53 BF **18 Claims**

A machine for forming a box from a collapsed blank that includes four interconnected sidewalls having four alternately interconnected end flaps extending therefrom, in which each blank is folded flat with one pair of interconnected end flaps facing the other pair of interconnected end flaps in juxtaposition to one another. The box forming machine includes a magazine assembly for supporting a plurality of blanks in vertically oriented planes and includes means for successively dispensing individual blanks to the receiving end of the box forming machine. The receiving end of the box forming machine includes means for spreading the extended end flaps wherein one pair of interconnected end flaps is angularly disposed to one side of the plane of the collapsed blank and the second interconnected pair of end flaps is angularly disposed on an opposite side of the plane of the collapsed blank. Means is provided for retaining the flaps in their spread relationship while conveyor means advances the collapsed blank to an end flap folding station which includes means for folding the pair of end flaps back against their respective connected sides. The collapsed carton blank is then moved to a box opening station having means for engaging and angularly displacing one side of the collapsed blank to an open position



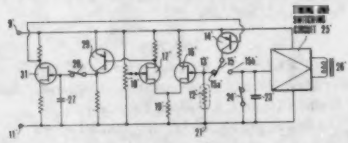
while an adjacent interconnected side is engaged and held in a fixed position by stabilizing means. After the box has been opened, the bottom end flaps are folded upwardly to a position aligned with the bottom of the box.

3,763,751

AUTOMATIC SHUTTER CONTROL CIRCUIT

Taiichi Akiyama, Okaya, Japan, assignor to Yashica Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 835,523, June 23, 1969, abandoned. This application May 22, 1972, Ser. No. 255,400
Claims priority, application Japan, June 29, 1968, 43/54779; June 29, 1968, 43/54780; July 1, 1968, 43/55012
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT **24 Claims**



The present invention relates to an automatic camera shutter control circuit and more particularly to an automatic shutter or exposure control circuit for a T.T.L. type single lense reflex camera having a constant voltage circuit. The invention thus relates to an electric shutter circuit having a control circuit for maintaining constant the voltage between terminals of a photosensitive element which measures the amount of light from a photographed object and generally comprises improvements in information storage and retrieval, and especially to a circuit for the automatic timing of camera shutters in response to light sensed by a through-the-lens light measuring system.

3,763,752

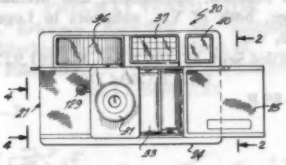
CAMERA WITH BUILT-IN STROBOSCOPIC FLASH

Martin S. Ackerman, East Hills, and George Hardy, Huntington, both of N.Y., assignors to Perfect Film & Chemical Corporation, Manhasset, N.Y.

Continuation of Ser. No. 788,727, Jan. 3, 1969, abandoned. This application Apr. 14, 1972, Ser. No. 240,346
Int. Cl. G03b *15/05, 17/20*
U.S. Cl. 95—11.5 R **3 Claims**

A camera having a view finder, an electronic flash assembly and light sensitive exposure indicator arranged in horizontal alignment over the lens. Electrical power is provided for selectively energizing said flash assembly and a mechanical linkage

structure for presenting operation of the shutter until a film advance has been actuated while preventing further operation of the shutter until the film advance has been actuated. A



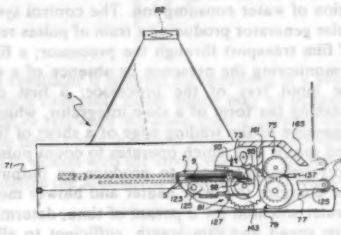
Flash operating contact is provided on the mechanical linkage for completing an operative electrical circuit from the electrical power to the flash assembly upon actuation of the mechanical linkage.

3,763,753

PHOTOGRAPHIC APPARATUS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 177,934
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 7 Claims



Photographic apparatus for use with film units of the self-processing type, and including a mechanism for folding one section of such a film unit relative to other sections thereof after processing of the film unit has been initiated. The foldable section preferably includes a structure for supplying a processing fluid (e.g. a pod), and that section is folded by the apparatus to a position behind the final print for disposing of the supply structure after it has served its primary function, but without requiring removal of the structure from the final print.

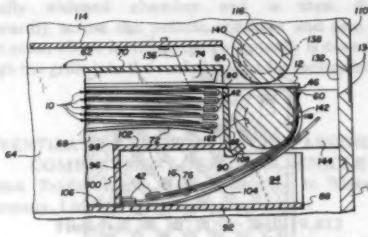
3,763,754

FILM PACK WITH RESILIENT WASTE HANDLING MEANS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,935
Int. Cl. G03b *19/10*
U.S. Cl. 95—19 19 Claims

A film pack for use in a processing camera is loaded with a plurality of film units each including processing materials releasably coupled to an image-recording section. After each film unit has been exposed, it is moved endwise between a pair of processing rollers in the camera for initiating processing of the film unit. Beyond the roller nip, the processing materials are separated from the image-recording section and are guided around one of the rollers to a storage compartment in the film pack casing. A spring member resiliently urges the processing materials against the one processing roller for facilitating delivery of the separated materials to the storage compartment and for retaining such materials in proper position in the storage compartment. When the film pack is removed from the camera, the same spring member urges the



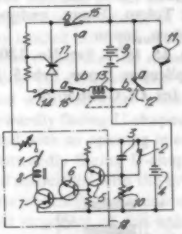
separated materials against a surface of the film pack casing for maintaining such materials in proper position.

3,763,755

MOTOR-DRIVEN SYSTEM FOR A STILL CAMERA

Yoshio Kuramoto, Toyonaka City; Kayoshi Tsujimoto, Osaka City, and Toshio Kobori, Sakai City, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka Prefecture, Japan

Filed Oct. 28, 1971, Ser. No. 193,405
Claims priority, application Japan, Oct. 30, 1970, 45/96085
Int. Cl. G03b *19/00, 9/58, 1/12*
U.S. Cl. 95—31 EL 9 Claims



In a motor-driven system for a still camera provided with a motor for advancing a film and cocking the shutter, with an electromagnet for controlling the shutter and with a network for controlling said motor and said electromagnet, an electronic circuit portion of the network is fed by one battery having a substantially constant-voltage but of small capacity, such as a mercury battery, and the electromagnet and the motor are fed by another battery of larger less expensive capacity, but having a voltage characteristic less constant than the one battery, such as manganese battery, so that the delicate electronic circuit portion has a substantially lengthy operating period.

3,763,756

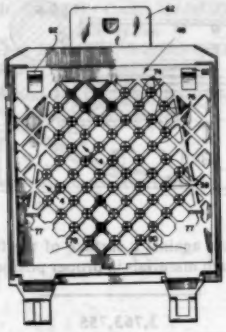
LIGHT-WEIGHT REFLEX OPERATOR ASSEMBLY

William P. Lane, Taunton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,702
Int. Cl. G03b *17/17, 19/12*
U.S. Cl. 95—42 21 Claims

The subject invention provides a reflex camera having a specular reflecting surface within the optical path to the film plane. A novel light-weight but structurally stiff operator mechanism positions a viewing surface closely proximate the film plane for viewing-focusing purposes. In a subsequent exposure mode configuration, the operator mechanism positions a reflective surface within the optical path in a position causing a coincidence of a focal plane with the film plane. A film unit stored in the camera is covered by the operator mechanism during the viewing-focusing mode to prevent any

illumination from reaching the film unit. When the shutter operates, the operator mechanism pivots about one end to uncover the film unit for an exposure by allowing illumination from a subject to reach the film unit.

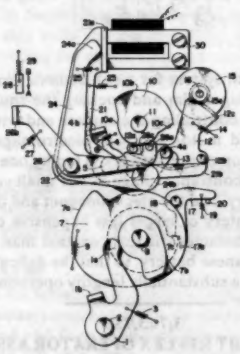


3,763,757

ELECTRICALLY CONTROLLED SHUTTER FOR PHOTOGRAPHIC CAMERAS

Tadao Hayami; Atsutada Nakatani, and Munetaka Shimizu, all of Itabashi-ku, Tokyo, Japan, assignors to Kabushiki Kaisha Koparu, Tokyo, Japan

Filed Jan. 25, 1972, Ser. No. 220,638
Claims priority, application Japan, Feb. 5, 1971, 46/4610
Int. Cl. G03b 9/08
U.S. Cl. 95—53 EB **3 Claims**



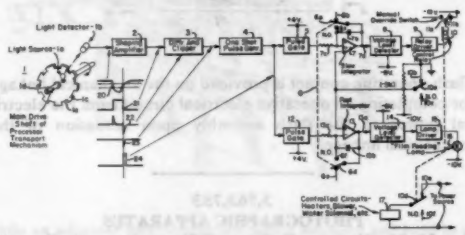
An electrically controlled shutter for photographic cameras comprising a magnet lever for operating a closing blade locking lever, a sectoral lever for delaying the rotary movement of said magnet lever, a bulb exposure lever engageable with said sectoral lever, and a changeover cam for switching the operative positions of said sectoral lever within the latter's scope of movement; and being operative so that, when the power source battery has become consumed and no longer usable or when a bulb exposure performance is required, the shutter function can then be controlled mechanically to obtain a proper exposure time.

3,763,758

CONTROL UNIT FOR MINIMIZING WATER AND POWER CONSUMPTION IN AUTOMATIC FILM PROCESSORS

Anthony W. Manack, Springfield, and Michael A. Sulak, Woodbridge, both of Va., assignors to Logetronics Inc., Springfield, Va.

Filed Sept. 25, 1972, Ser. No. 291,927
Int. Cl. G03d 3/08
U.S. Cl. 95—89 R **17 Claims**



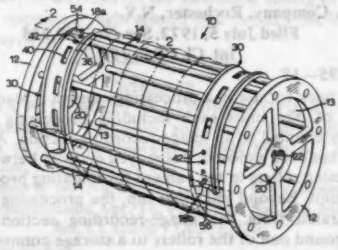
An automatic film processor is provided with a control system for inhibiting the drier heater and blower motor circuits unless film is being transported through the processor, to save electrical power, and to prevent wash water from flowing to waste except while film is being transported, in order to effect reduction of water consumption. The control system includes a pulse generator producing a train of pulses related to the rate of film transport through the processor; a film feed sensor for monitoring the presence or absence of a sheet of film at the input tray of the processor; a first counter, preferably taking the form of a slow integrator, which is activated by passage of the trailing edge of a sheet of film past the film feed sensor and which operates to count pulses from the transport pulse generator to produce an output signal operative to energize the drier heater and blower motor circuits and water solenoid for a period of time, determined by the transport speed and film length, sufficient to allow the trailing edge of the film to reach the catch tray at the output of the processor; and a second counter, preferably taking the form of a fast integrator, activated by passage of the trailing edge of the sheet of film past the film feed sensor for counting a series of pulses from the transport pulse generator and operative to indicate when a further sheet of film can be fed into the processor with constant trailing edge to leading edge space separation between the film sheets.

3,763,759

PROCESSING OF PHOTOGRAPHIC ROLL FILM

Roy Ramsdale, Willowdale, Ontario, Canada, assignor to Alex L. Clark Limited, Toronto, Ontario, Canada

Filed June 5, 1972, Ser. No. 261,557
Int. Cl. G03d 3/08
U.S. Cl. 95—93 **5 Claims**



A method and device for processing photographic roll film, in which the film is carried by a flexible band which is wound

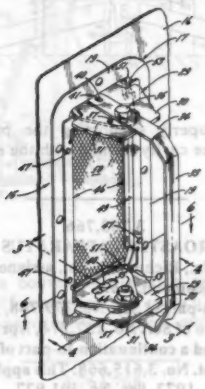
spirally on a squirrel cage reel and releasably fixed at each end to the reel.

3,763,760

TWO-WAY VENTILATOR

Gordon W. Erickson, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Mar. 27, 1972, Ser. No. 238,092
Int. Cl. B60h *1/26*
U.S. Cl. 98—2 **19 Claims**



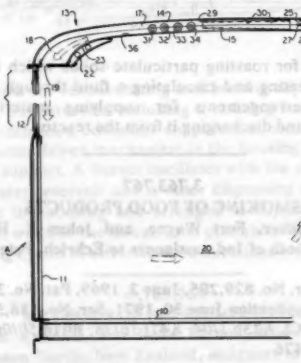
The ventilator is adapted for mounting in a vehicle cab and includes a swingable cover which may be opened in either a forward or rearward direction from a fully closed position. A slidable latch holds the cover releasably in its closed position, swings in unison with the cover when the latter is opened, and helps define the axes about which the cover swings.

3,763,761

VEHICLE HEATING AND COOLING MECHANISM

George Fred Anderson, Chula Vista, and Charles C. Hill, La Jolla, both of Calif., assignors to Rohr Industries Inc., Chula Vista, Calif.

Filed Apr. 27, 1972, Ser. No. 248,100
Int. Cl. F24f *13/00*
U.S. Cl. 98—9 **5 Claims**



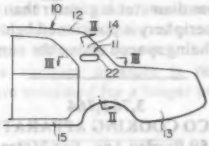
A combined heating and air conditioning system for a vehicle comprises a high pressure air line extending lengthwise centrally between two sets of heat transfer tubes in a chamber provided in the roof structure of the vehicle. A plurality of laterally outwardly directed nozzles discharge air jets from the line into laterally directed ejector tubes, which mix the jet air with injected return air drawn upwardly through a center grille in the vehicle ceiling and direct the mixed air transversely across the heat transfer tubes, which are selectively heated or cooled as required. The heated or cooled air flows through a gradually widened chamber and is then discharged downwardly across the vehicle windows and into the passenger zone, where it diffuses and eventually is drawn back up through the grille into the roof chamber for recirculation.

3,763,762

VENTILATING SYSTEM FOR THE PASSENGER COMPARTMENT OF MOTOR VEHICLE

Yasuhisa Tsuda, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Jan. 20, 1972, Ser. No. 219,412
Claims priority, application Japan, Jan. 28, 1971, 46/3546
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.18 **4 Claims**



A ventilating system for a motor vehicle including a vehicle body having a passenger compartment and rear pillar structures for supporting the roof structure of the vehicle, which ventilating system consists of an air inlet in communication with the passenger compartment, at least one of the pillar structures having spaced inner panel and outer panel members forming a chamber therein, an inwardly facing U-shaped member located in the chamber and having a flange portion integrally formed with the inner panel member of the pillar structure, the inwardly facing U-shaped member having a bottom wall provided with an opening in communication with the air inlet, and outwardly facing U-shaped member located in the chamber and associated with the inwardly facing U-shaped member for interrupting communication between a trunk room or side sill structure of the vehicle and the passenger compartment, the outwardly facing U-shaped member having a bottom wall provided with an opening and having a flange portion attached to the outer panel member of the pillar structure, the opening of the bottom wall of the outwardly facing U-shaped member being aligned with the opening of the bottom wall of the inwardly facing U-shaped member, the bottom walls of the inwardly facing and outwardly facing U-shaped members being connected with each other, and an air outlet formed in the outer panel member of the pillar structure and in communication with the air inlet through the openings.

3,763,763

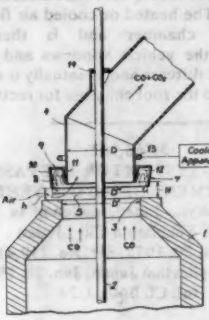
GAS-COLLECTING METHOD FOR A STEEL-MAKING CONVERTER

Karl-Friedrich Baumann, Hosel; Hans Hoff, Essen-Bredeney, both of Germany, and Kurt Braumuller, Graz/Osterreich, Austria, assignors to Gottfried Bischoff Bau Kompl. Gasreinirigungs und Wasserkuhlanlagen KG, Essen, Germany and Waagner-Biro AG, Vienna, Austria

Division of Ser. No. 780,456, Dec. 2, 1968, Pat. No. 3,559,975.
This application Sept. 29, 1970, Ser. No. 76,647
Claims priority, application Germany, Dec. 2, 1967, P 15 83 222.1
Int. Cl. F23j *11/00*; C21c *5/42*
U.S. Cl. 98—115 R **1 Claim**

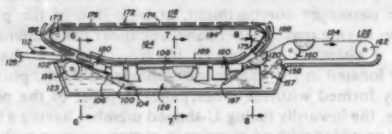
A gas-collecting hood is arranged over the circular outlet or mouth of a top-blown steel-making converter. This hood comprises a cylindrical tube or duct with a smaller diameter than the mouth coaxial therewith. The tube is fitted with an outer

trough which opens downwardly and sustains a crown vortex feeding back into the main stream. This trough has an outer



wall or apron whose diameter is greater than that of the mouth and whose lower periphery is positioned below the bottom end of the tube, while being spaced above the converter.

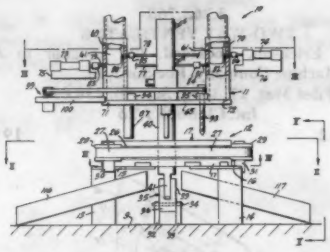
3,763,764
TACO COOKING APPARATUS
Frank R. Schy, 1659 Borden Ave., San Mateo, Calif.
Filed Nov. 17, 1971, Ser. No. 199,562
Int. Cl. A47j *37/12*
U.S. Cl. 99—353 **8 Claims**



An improved taco shell cooking apparatus including a cooking means, at least one forming device, and a conveyor for moving a sheet of comestible material past the cooking means and thence to a packaging station. The forming device may include, or be integral with, an articulated endless conveyor belt and/or one or more fixed bodies having surfaces across which the material is transported in order to form it into the desired configuration as it is cooked.

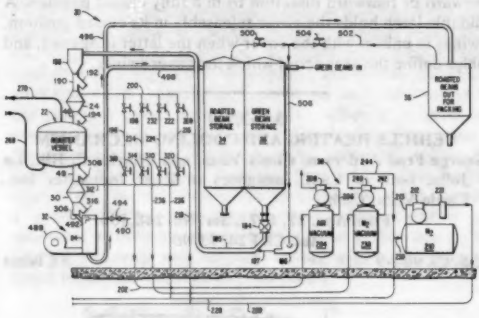
3,763,765
APPARATUS AND METHOD FOR MAKING FILLED FOOD ITEM
Richard L. Nelson, 669 Riverside Dr., and Walter P. Nelson, 154 Fuller Rd., both of Battle Creek, Mich.
Continuation-in-part of Ser. No. 73,807, Sept. 21, 1970, Pat. No. 3,666,485, which is a continuation of Ser. No. 793,220, Jan. 10, 1969, Pat. No. 3,538,840, which is a continuation of Ser. No. 650,137, June 29, 1967, abandoned, which is a continuation of Ser. No. 356,874, April 2, 1964, abandoned. This application Apr. 16, 1971, Ser. No. 134,731
Int. Cl. A21c *9/06*; B65b *43/46*, *43/56*
U.S. Cl. 99—450.7 **11 Claims**

A filled edible product is described, as for example a bread stick, a shorter like item in the form of a pretzel stick, or products of other shapes such as balls or irregular shapes, any of which are at least initially brittle, unyielding, and incompressible. The product is filled by first inserting it in a holding means which contains a resilient product support member for resiliently gripping and supporting the stick, after which an elongated cavity is formed in the product from one end and the cavity subsequently filled with an extrudible material such as cheese, whipped cream, peanut butter, custard, fruit preserves, and jelly. The invention also includes an improved continuously operating, rotatively indexed apparatus for



drilling while properly supporting the product and subsequently filling the cavity formed with the extrudible material.

3,763,766
ROASTING APPARATUS
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Continuation-in-part of Ser. No. 279,748, Aug. 11, 1972, which is a division of Ser. No. 137,274, April 26, 1971, Pat. No. 3,730,731, and a continuation-in-part of Ser. No. 44,464, June 8, 1970, Pat. No. 3,615,668. This application Oct. 30, 1972, Ser. No. 301,977
Int. Cl. A23f *1/02*; A23n *9/02*, *9/04*
U.S. Cl. 99—468 **9 Claims**

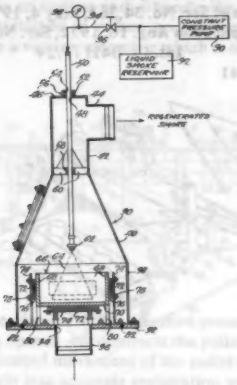


Apparatus for roasting particulate solids which includes a system for heating and circulating a fluid through a roasting vessel and arrangements for supplying material to be processed to and discharging it from the reactor.

3,763,767
SMOKING OF FOOD PRODUCTS
Harvey O. Baker, Fort Wayne, and Johan E. Hoff, West Lafayette, both of Ind., assignors to Eckrich, Peter, & Sons, Inc.
Division of Ser. No. 829,285, June 2, 1969, Pat. No. 3,615,729. This application June 30, 1971, Ser. No. 158,545
Int. Cl. A23b *1/04*; A47j *36/38*; B01d *50/00*
U.S. Cl. 99—476 **2 Claims**

Apparatus for generating a reduced carcinogen content smoke aerosol for use in the smoking of food products. A housing having a smoke regeneration zone therein and a gas outlet for regenerated smoke is provided. The zone is heated and a system is included for introducing and dispersing a liquid smoke composition within the heated zone, the heat reducing the carcinogen content of the resulting smoke

aerosol. The apparatus may further include a system for providing the lowered carcinogen content liquid smoke for use in regeneration by the apparatus above, which additional



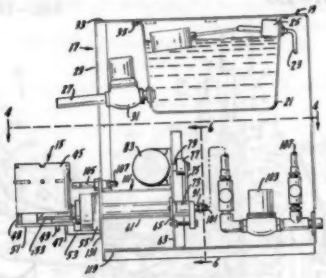
system includes a conventional smoke generator, a small cyclone capable of separating the particulate phase of the smoke from the vapor phase thereof and condensing apparatus.

3,763,768

AUTOMATIC FOOD WARMER

Allan A. Norin, Chicago, Ill., assignor to Fredrick Dorsey Montgomery, Chicago, Ill.

Filed Nov. 3, 1970, Ser. No. 86,515
Int. Cl. A23l *1/00*
U.S. Cl. 99—483 **9 Claims**



A machine for reconstituting and heating dry frozen foods to serving temperatures including a housing having an oscillatable frozen food container support mounted thereon. An electric motor driven mechanism in the housing oscillates the container support. A burner oscillates with the container support. A water reservoir and a water dispensing apparatus are located in the housing and arranged to supply a measured quantity of water to the frozen food container. Timers provide two heating cycles of different time durations.

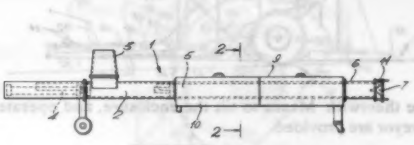
3,763,769

METHODS OF PRESSING CHEESE

Raymound Bysouth, and Peter Struan Robertson, both of Palmerston North, New Zealand, assignors to New Zealand Dairy Research Institute, Fitzherbert West, Palmerston North, New Zealand

Filed June 28, 1971, Ser. No. 157,384
Int. Cl. B30b *9/02*
U.S. Cl. 100—37 **7 Claims**

A method of pressing curd to form cheese in which prepared divided curd is first pre-pressed for a period of time and under pressure to reduce the moisture content of the curd to a desired level, with this level being substantially the same as the moisture content of the finished cheeses. The pre-pressing is effected in a suitably perforated tunnel with a constricted outlet and the arrangement is such that expressed moisture excapes through the perforations of the tunnel. This pre-pressed curd may then be redivided and passed through a



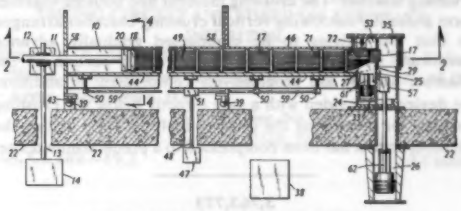
second pre-pressing stage or, alternatively, passed directly to a final press chamber, with this pressure chamber being hermetically sealable and held under vacuum pressure for a period of time during which mechanical pressure is applied to the curd to facilitate cohesion between the divided curd to form cheese. The vacuum pressure is released, and the mechanical pressure sustained for a longer period, preferably, overnight.

3,763,770

METHOD FOR SHEARING SPENT NUCLEAR FUEL BUNDLES

Chester S. Ehrman, Basking Ridge; Louis Scheib, Morristown, both of N.J.; Charles S. Worsley, Burlingame; Frank J. Jones, San Bruno, and Robert M. Freeborg, Lafayette, all of Calif., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,249
Int. Cl. B30b *13/00*
U.S. Cl. 100—39 **6 Claims**



Apparatus and process for shearing long units, such as nuclear fuel bundles, into pieces of predetermined length for further processing. The apparatus comprises a sealable magazine for receiving the bundles, means for urging the bundle forward, a vertical and horizontal gag, or alternately two parallel-acting horizontal gags operated in conjunction with a vertical restraint, for compressing the front portion of the bundle, and a shear blade adjacent to the gags, whereby the nuclear fuel bundle may be urged forward in increments, compressed and sheared into pieces.

3,763,771

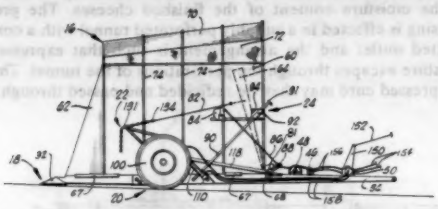
STACKER VEHICLE

Jerome J. Gerber, Murdock, Kans.

Filed Apr. 24, 1972, Ser. No. 246,880
Int. Cl. B60p *1/30, 1/38*
U.S. Cl. 100—100 **7 Claims**

A stacker vehicle receives material and unloads same in a stack on the ground. It has a ground supported bed. A con-

veyor and a stack enclosure to receive material are mounted on the bed. The enclosure is connected to the conveyor to



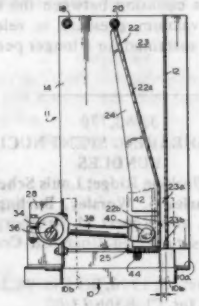
move therewith. Means to tilt the enclosure, and operate the conveyor are provided.

3,763,772

MULTIPLE-PASS CRUSHING DEVICE

Victor E. Baker, Coos Bay, Oreg., assignor to Elina Baker, Coos Bay, Oreg.

Filed June 28, 1972, Ser. No. 267,119
Int. Cl. B30b *15/32, 9/32*
U.S. Cl. 100—218 **4 Claims**



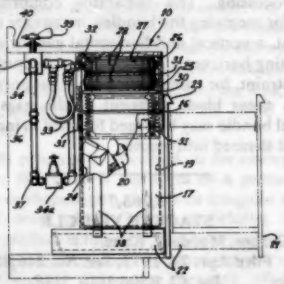
A multiple-pass crushing device for continuously compacting debris comprises a housing containing a reciprocable crushing member. The crushing member and housing together form a steadily narrowing vertical crushing chamber arranged so that the articles to be compacted gradually advance downward by gravity toward the narrower portion of the chamber as they are progressively compressed. In addition, the device is provided with a gate directly below the crushing member for preventing the crushed material from exiting the chamber until it has been compressed to a predetermined size.

3,763,773

TRASH COMPACTOR APPARATUS

Robert A. Clay, 313 Pecan St., Del Rio, Tex.

Filed Dec. 13, 1971, Ser. No. 207,324
Int. Cl. B30b *1/32*
U.S. Cl. 100—229 A **1 Claim**



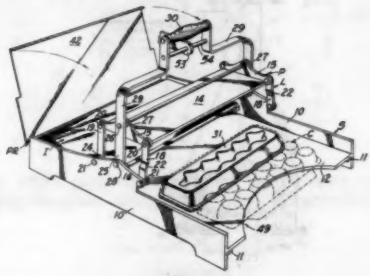
A household trash compactor operable by means of household water supply and pressure.

3,763,774

PORTABLE PRINTER FOR PREFORMED CARTONS

David L. Pearl, Atlanta; John G. Waller, Jr., and John G. Waller, Sr., both of College Park, all of Ga., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 34,363, May 4, 1970, abandoned.
This application Aug. 16, 1972, Ser. No. 281,066
Int. Cl. B41f *17/24*
U.S. Cl. 101—41 **4 Claims**



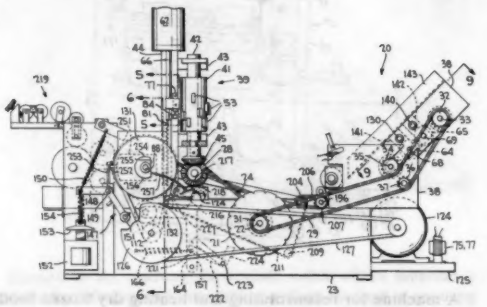
Apparatus for printing invoemation on preformed cartons such as egg cartons in an egg packing plant. The apparatus includes a support framework, a shaped platen for supporting a preformed carton thereon, a printer having information thereon to be printed on the carton, an inker for inking the information on the printer, and a drive for cyclically moving the printer from an inking position to a printing position.

3,763,775

CARD IMPRINTING MACHINE

William B. Miles, Bedford, Va.

Filed Sept. 11, 1972, Ser. No. 288,121
Int. Cl. B41f *13/14*
U.S. Cl. 101—233 **22 Claims**



A card imprinting machine having a means for both automatically setting the edge guides for the cards in accordance with the desired margin for indicia to be imprinted thereon from a side edge of the card, and for simultaneously causing the printing head to automatically rotate for printing at a desired margin from the leading edge of each card passing through the printing couple.

3,763,776

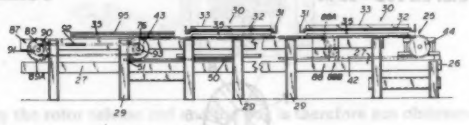
VACUUM PALLET TYPE SCREEN PRINTING MACHINE WITH REGISTRATION MEANS

David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Mar. 4, 1971, Ser. No. 120,819
Int. Cl. B41f *15/20*
U.S. Cl. 101—126 **17 Claims**

This disclosure is directed to a pallet type screen printing machine in which a pallet is indexed to a printing station when

an article supported thereon is screen printed. A feed table with guides is cooperatively disposed relative to the pallet at a feed station to facilitate the accurate positioning of a work piece onto the pallet. The machine comprises an endless drive for effecting movement of one or more pallets to and from a printing station in an endless path whereby the face of the pallet is always maintained in a face up position. The pallet is formed to define a vacuum chamber which is operatively connected to a source for drawing a negative pressure thereon. A flexible coupling operatively connects the pallet to the endless drive to permit limited movement of the pallet so that the pallet may be brought into accurate registration with the printing head at the printing station. Registration of the pallet in the printing station is effected by a locating cam and a cooperatively associated cam follower, which when activated, will effect the required alignment and registration of the pallet with the printing head.

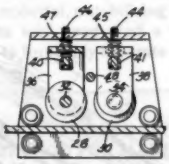


3,763,777

INDEPENDENTLY ADJUSTABLE MULTIPLE DATA RECORDER

Albert C. Brown, Eastlake, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Nov. 17, 1971, Ser. No. 199,626
Int. Cl. B41f 3/20
U.S. Cl. 101—269 **5 Claims**



A data recorder having a carriage movable forwardly from a home position to an actuated position and return rearwardly to record data on a form from printing tokens. The carriage mounts two roller platen assemblies, each independently adjustable to adjust printing pressure, one platen to print on the forward movement and the other on the rearward movement.

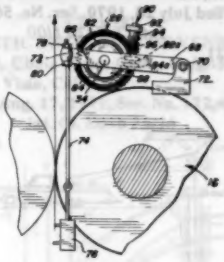
3,763,778

METHOD FOR SURFACE MAINTENANCE OF PRINTING PRESS BLANKET CYLINDERS

Donald K. Sills, and Hardis Queen, both of Escondido, Calif., assignors to Ryco Graphic Mfg., Inc., Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,649
Int. Cl. B41f 35/06
U.S. Cl. 101—426 **5 Claims**

A movable brush, preferably in the form of a rotatable brush roller, is positioned with its peripheral portions in contact with the surface of the blanket cylinder of an offset printing press during the printing operation. The speed of the brush may be controlled by various means disclosed so that the surface speed of the brush differs from the surface speed of the blanket cylinder.



3,763,779

THERMAL COPYING MEANS EMPLOYING OPEN-CELLED MICROPOROUS FILM

Steven G. Plovan, Livingston, N.J., assignor to Celanese Corporation, New Yrok, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,428
Int. Cl. B41m 5/26; B41l 13/00
U.S. Cl. 101—473 **8 Claims**

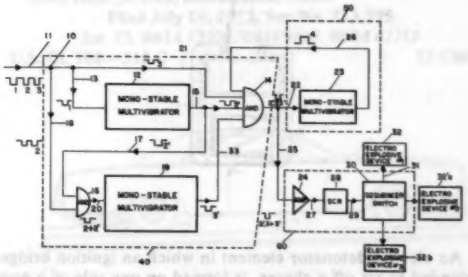
Thermally sensitive master sheet for use in multiple reproduction processes having open-celled microporous films with parallel fibrils. When exposed during use the heat generated by image areas of an original produces coalescence of the microporous voids within the film thereby clarifying the film at that site with a high definition transfer of the original. With cold stretching with or without subsequent hot stretching, with heat set, possess good resistance to heat, moisture and normal pressure of handling.

3,763,780

MINE-ACTUATING SYSTEM USING ONE-SHOT MV TIMING CIRCUIT AND TIMED MV FEEDBACK INHIBITOR

Harvey A. Kasinoff, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 16, 1971, Ser. No. 210,261
Int. Cl. F42b 23/26, 5/08
U.S. Cl. 102—19.2 **3 Claims**

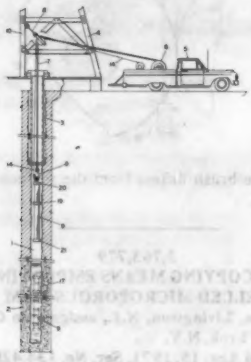


This invention relates to a mine actuating system which becomes operable upon receiving electro-magnetic radiation pulses from a proximity detector. The device utilizes an electronic gating means coupled to an inhibiting means and a fire control means for providing an initiating voltage pulse to sequentially fire a plurality of electrically connected electro-explosive devices.

3,763,781
METHOD AND APPARATUS FOR SHOOTING WELLS

Henry H. Halley, Jr., St. Louis, Mo., assignor to Drogen, Incorporated, Alton, Ill.

Filed July 20, 1970, Ser. No. 56,438
Int. Cl. F42d *1/00*
U.S. Cl. 102—21 7 Claims

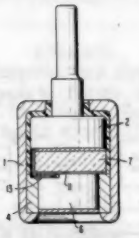


Fracturing and loosening geological formations with energy derived from the reaction of an Alkali metal with water.

3,763,782
METAL LAYER INITIATOR

Hellmut Bendler, Erlangen-Spardorf; Uwe Brede, Schwalg; Heinz Gawlick, Furth/Bay, and Peter Roh, Troisdorf-Sieglar, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Apr. 26, 1971, Ser. No. 137,464
Claims priority, application Germany, Apr. 24, 1970, P 20 20 016.2
Int. Cl. F42b *3/12*
U.S. Cl. 102—28 EB 16 Claims

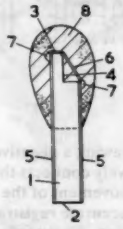


An electric detonator element in which an ignition bridge, intended to set off a charge, is formed on one side of a non-conductive carrier which is inserted into a conductive housing with one surface contacting a pole piece and the other surface having the bridge formed thereon being pressed against the primer charge which is electrically connected with the housing, and conductive means interconnecting the bridge on one side of the carrier with the surface of the carrier contacting the pole piece either through a bore in the carrier or around the periphery thereof.

3,763,783
MANUFACTURE OF FUZE HEADS

Arwyn Theophilus Thomas, 66 Gillmans Rd., Orpington, and Raymond James Williams, 48 Langdale Gardens, Hove, both of England

Continuation-in-part of Ser. No. 110,720, Jan. 28, 1971, abandoned. This application July 9, 1971, Ser. No. 161,259
Claims priority, application Great Britain, Feb. 4, 1970, 5356/70
Int. Cl. C06c *1/00*
U.S. Cl. 102—28 M 8 Claims

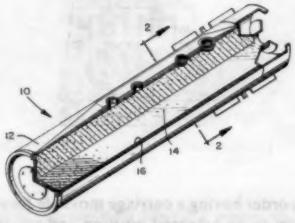


Novel fuse heads and a process for making them in which a suspension of a primary explosive composition is made in water to which a small amount of one or more organic hydrophilic polymers is added in the proportion one to 10 percent by weight of the dry primary explosive composition. Bridge wires are immersed in the suspension and removed with the adhering material and the fuse heads so produced are allowed to dry.

3,763,784
SHAPED CHARGE WARHEADS

Herbert D. Mallory, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1968, Ser. No. 734,188
Int. Cl. F42b *13/10*
U.S. Cl. 102—56 1 Claim



Shaped charged warheads are filled with an explosive mixture consisting entirely of materials selected so that the warheads contain only finer particle sizes ranging between 0.05 microns up to about 200 microns.

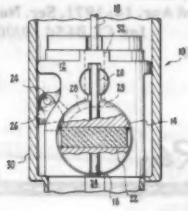
3,763,785
MAL-ASSEMBLY FEATURE FOR EXPLOSIVE TRAIN FUZES

George S. Briggs, Adelphi, Md., and Marvin W. Keith, Jr., Evanston, Ill., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 20, 1972, Ser. No. 236,003
Int. Cl. F42c *15/00*
U.S. Cl. 102—76 R 2 Claims

A safety device for an explosive train arming rotor type fuze comprising a dog co-acting with the arming rotor precluding

mal-assembly of the fuze. The fuze may only be assembled when the rotor is properly held in its out-of-line safe position



by the rotor release rod and the dog is therefore not obstructing the assembly of the outer housing.

3,763,786

MILITARY DARTS

Gilmour C. MacDonald, 55 Warwick Dr., Rt. 1, Shalimar, Fla.

Filed Jan. 2, 1964, Ser. No. 335,083

Int. Cl. F42b *11/30*

U.S. Cl. 102—92 **10 Claims**

1. In an antipersonnel dart, combination comprising a magnetized head adapted to deliver poison, the poison charge including a magnetic material, a stabilizing tail section telescopically carried by the said head, and a combination igniter-propellant adapted to forceably separate the head and tail sections, at impact.

3,763,787

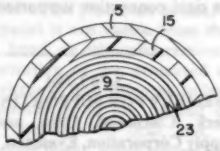
CARPET ROLL REINFORCED PROPELLANT AND METHOD FOR MAKING

Sieford F. Schultz, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 11, 1971, Ser. No. 114,708

Int. Cl. F42b *1/00*

U.S. Cl. 102—100 **2 Claims**



A composite or modified double base propellant that is reinforced with a substrate material and suspended in a rocket motor case from the head end of the propellant by bonding the propellant to the motor case. The substrate material is fabricated into the propellant composition by being incorporated in a carpet roll fabrication. Applicant's reinforced propellant is therefore applicable for use in a high pressure, short duration eject motor which requires a high acceleration load capability.

3,763,788

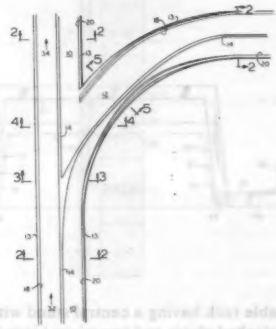
MAGNETIC SWITCHING OF VEHICLES

Lonnie C. Pougue, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Aug. 17, 1971, Ser. No. 172,491

Int. Cl. E01b *25/26*

U.S. Cl. 104—130 **4 Claims**



A system for switching a high speed captive surface vehicle from a primary guideway to a secondary guideway by magnetic attraction means. The vehicle carries on its sides controllable electro-magnetic force fields that cause the vehicle to be magnetically attracted to without touching corresponding ferro-magnetic guidance rails along the guideways. When switching is required, the magnetic force field on the side of the moving vehicle opposite from the side of an arcuate secondary guideway intersection is de-energized allowing the vehicle under control of the remaining energized force field to follow the guide rail of the secondary guideway. When the vehicle clears the intersection, the de-energized force field is then re-activated thus completing the switching maneuver to resume normal guidance control along the secondary guideway.

3,763,789

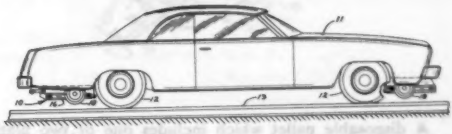
CONVERTIBLE RAIL-HIGHWAY VEHICLE

Buford W. Olson, Sr.; Eldrid W. Nelson, and Albin A. Davidson, all of Minneapolis, Minn., assignors to Chas. Olson & Sons, Incorporated, Minneapolis, Minn.

Filed July 19, 1972, Ser. No. 273,295

Int. Cl. B61d *15/00*; B61f *9/00*; B62d *61/12*

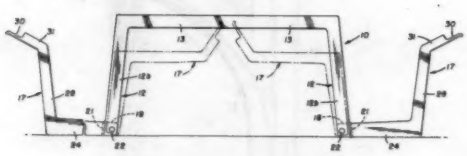
U.S. Cl. 105—215 C **15 Claims**



A pair of flanged wheels to guide along railroad tracks forming a conversion kit is mounted immediately adjacent the rubber tired wheels of the vehicle. A frame attachable to the body or frame of the vehicle; each of the flanged wheels being mounted on an extensible and retractable mounting arm swingably mounted on the frame and spring pressed to extended position; lifting and lowering arms connected with the flanged wheels and with each other and being slidable along

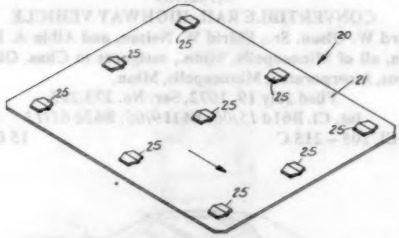
the frame to raise and lower the flanged wheels relative to the track; latching mechanism retaining the wheels in lowered and raised positions.

3,763,790
FOLDABLE PLATE AND CUP RACK
William D. Taylor, Wooster, Ohio, assignor to Rubbermaid Sales Corp., Wooster, Ohio
Filed July 3, 1972, Ser. No. 268,771
Int. Cl. A47b *47/00*
U.S. Cl. 108—30 6 Claims



A foldable rack having a central stand with an elevated top shelf for stacked plates and two wings hinged to opposite sides of the base of the central stand, said wings having bottom platforms for supporting dishes on edge and outer elevated racks for hanging cups. The wings fold under the top shelf when not in use.

3,763,791
DISPOSABLE PALLET
Thomas L. Wilcox, Jr., P.O. Box 31157, Indianapolis, Ind.
Continuation-in-part of Ser. No. 134,647, April 16, 1971, abandoned. This application Mar. 31, 1972, Ser. No. 239,884
Int. Cl. B65d *19/00*, *19/38*
U.S. Cl. 108—51 20 Claims

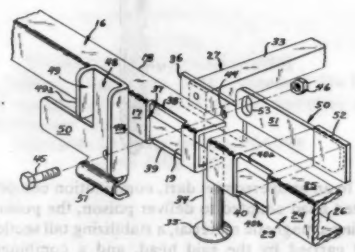


A disposable pallet which includes one or two platform panels formed of corrugated cardboard or paperboard stock supported on a plurality of corrugated cardboard or paperboard legs. The legs are folded to produce a rigid box-like structure having tongues which extend in a first direction through slots in the platform panel and fold over to extend in a direction opposite to said first direction through additional slots in the panel. A locking tongue on each side of each leg engages in a slot in the panel to maintain the leg in its box-like form.

3,763,792
LOAD SUPPORTING PALLET
Wells A. Webb, Berkeley, Calif., assignor to Freling E. Baker, San Francisco, Calif.
Filed Apr. 14, 1971, Ser. No. 133,795
Int. Cl. B65d *19/00*
U.S. Cl. 108—51 4 Claims

An elongated continuous storage and shipping pallet is made up of separable sections so that a selected number of tiers of cartons may be taken from a stack by lift trucks without manual handling.

3,763,793
SYSTEM FOR CONNECTING WIRE SHELF UNITS END-TO-END
David C. Fleck, Cincinnati, Ohio, assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 27, 1971, Ser. No. 212,487
Int. Cl. A47b *57/00*
U.S. Cl. 108—64 5 Claims

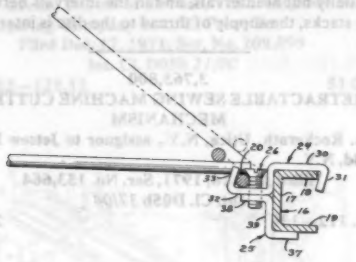


Wire shelves include elongated front and rear rails in the form of C-shaped channels. Each rail includes an outer vertical wall which is provided with an opening adjacent each end. An elongated clip with an anchor pad at one end is received within axially aligned channels of two shelves desired to be connected together end-to-end. The anchor pad locks into an end aperture of one rail and extends into the channel of the associated rail of a second shelf to hold the shelves in place while an end frame and leg assembly are assembled to the second shelf. A single bolt then connects all the parts together, including the horizontal clip, at the end aperture of the second shelf to form a rigid connection supported by only a single leg assembly.

3,763,794
CLAMP ASSEMBLY FOR SUPPORTING A WIRE SHELF
David C. Fleck, Cincinnati, Ohio, assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Dec. 27, 1971, Ser. No. 212,488
Int. Cl. A47b *57/00*
U.S. Cl. 108—64 14 Claims

A clamp assembly for connecting a wire shelf to a support member. The clamp includes upper and lower brackets adapted to be secured to each other and in cooperative clamping relation with the support by means of a screw. The upper

bracket includes a recess for receiving a wire rod of the shelf which is wedged and securely retained in the recess by the



head of the screw and, in particular, by the conical bearing surface provided by that head.

3,763,795

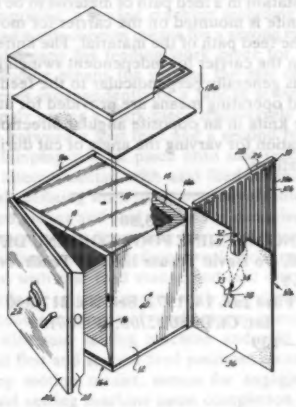
ALARM CONDITION SENSOR

Leonard R. Wetz, Jr., Fairfield, Ohio, assignor to The Mosler Safe Company, Hamilton, Ohio

Filed June 28, 1972, Ser. No. 267,008

Int. Cl. E05g *3/00*

U.S. Cl. 109—24 **1 Claim**



An alarm condition sensor for enclosing a device to be protected, such as a vault, which will change its electrical properties and thereby facilitate an alarm indication when a person tampers with the sensor and/or attempts to cut, burn or otherwise penetrate the protected device to gain access thereto. The alarm condition sensor includes frangible, opaque panels adhesively secured to the exterior surface of the protected device to completely enclose it. The panels have a printed circuit on the inside surface thereof which is electrically insulated from the exterior of the protected device, and due to the opaqueness of the panel is not visible from the outside. Attempts to pry, fold, bend, or otherwise remove the frangible panel prior to penetration of the protected unit itself will cause the panel, by virtue of its brittleness, to break, interrupting the electrical continuity of the printed circuit formed thereon. Similarly, attempts to drill, cut, or otherwise penetrate the protective panel, which necessarily occur prior to penetration of the protected unit, either interrupt the electrical continuity of the printed circuit or at least short-circuit it to ground via the vault which is typically of conductive material. In either case, a change in the electrical circuit occurs which can be sensed and an alarm indication provided prior to the point in time when the protective device is actually penetrated.

3,763,796

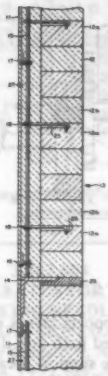
FURNACE WALL CONSTRUCTION

Charles R. Venable, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 28, 1972, Ser. No. 229,977

Int. Cl. F23b *1/04*

U.S. Cl. 110—1 A **8 Claims**



The upper surfaces of at least selected fire bricks in the inner lining wall of a furnace are grooved to receive the horizontal elements of a hook member, the grooves being of sufficiently greater depth than the thickness of the hook element to permit thermal expansion of the fire brick in the vertical direction without causing significant bending forces on the hook element.

3,763,797

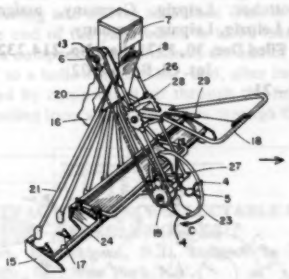
ROW SEEDER

Nestor C. Navasero, Los Banos, Philippines, assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 14, 1971, Ser. No. 162,570

Int. Cl. A01c *5/00*

U.S. Cl. 111—77 **1 Claim**



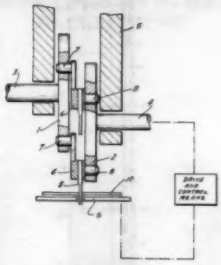
A planter for planting rows of seeds, particularly pregerminated seeds such as rice, comprises a hopper from which seed is fed to a horizontal, longitudinally fluted feed roll which is rotated through a sprocket chain by a ground wheel and the device. Seeds drop from the fluted roll into a distributor from which, in turn, they pass to a plurality of individual seed tubes arrayed transversely to the direction of motion of the device. Gentle curves prevent damage to the delicate seeds which are deposited in furrows produced by openers under the seed tubes.

3,763,798

APPARATUS FOR STITCHING SHEET MATERIALS

Winfried Bottcher, Leipzig, Germany, assignor to Veb Polygraph Leipzig Kombinat Fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Dec. 29, 1971, Ser. No. 213,255
Int. Cl. D05b *65/00;* **B42b** *3/00*
U.S. Cl. 112—21 **5 Claims**



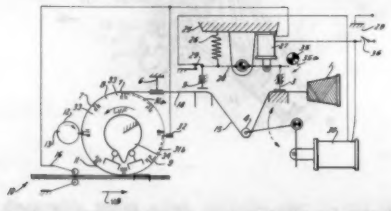
A support means supports layers of sheet material which travel in a predetermined path and direction. A working station is located above the support means and comprises a pair of axially parallel rotatable shafts extending transversely of the path, a pair of flange members which are mounted on the respective shaft for rotation therewith and are located in at least substantially parallel spaced planes, and at least one needle carrier mounted between the flange members pivotable with reference to both of them about axes paralleling one another and the shafts. One or more needles are carried by the needle carrier extending radially of the flange members so as to project radially beyond the same and to successively penetrate and withdraw from sheet material beneath the working station in response to the needle carrier approaching and receding from a predetermined angular position relative to the support means. Drive and control means effects advancement of the needle carrier at a circumferential speed which at least approximates the linear speed of travel of the sheet material.

3,763,799

METHOD FOR CONNECTING SUPERIMPOSED LAYERS OF SHEET MATERIAL AND APPARATUS FOR CARRYING OUT THE METHOD

Winfried Bottcher, Leipzig, Germany, assignor to Veb Polygraph Leipzig, Leipzig, Germany

Filed Dec. 30, 1971, Ser. No. 214,232
Int. Cl. B42b *1/02*
U.S. Cl. 112—21 **13 Claims**



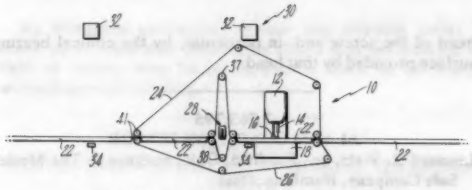
Stacks of superimposed sheet material are moved at identical spacing sequentially underneath the peripher of a rotating drive. A thread, from which thread staples for connecting the sheet material are to be made, is withdrawn from a bobbin and supplied to the disc where it is engaged and circumferentially entrained. The thread is severed into lengths from each of which one or more thread staples can be made; in the latter case, the length is further subdivided into sections which each correspond to one thread staple length. The thus-obtained thread staples are stitched through the sheet material of a proximal stack. When the thread staples are not to be made sequentially but at intervals, and in the intervals between successive stacks, the supply of thread to the disc is interrupted.

3,763,800

RETRACTABLE SEWING MACHINE CUTTING MECHANISM

John L. Rockerath, Utica, N.Y., assignor to Jetsew Inc., Barneveld, N.Y.

Filed June 16, 1971, Ser. No. 153,664
Int. Cl. D05b *37/04*
U.S. Cl. 112—130 **20 Claims**



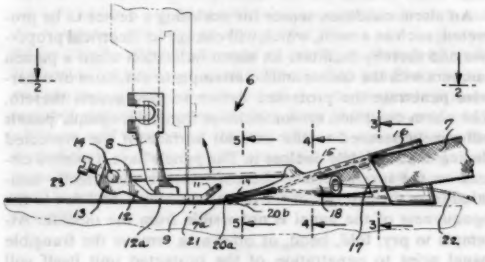
An extensible and retractable carrier is operably mounted at a cutting station in a feed path of material to be stitched and cut, and a knife is mounted on the carrier for movement into and out of the feed path of the material. The knife is pivotally supported on the carrier for independent swinging movement about an axis generally perpendicular to the feed path of the material, and operating means are provided for automatically swinging the knife in an opposite angular direction after each cutting operation for varying the angle of cut during alternate cutting operations.

3,763,801

SEWING MACHINE FOOT CORDING DEVICE

Ann R. Bozzi, c/o David Traum Inc., 85 Tenth Ave., Franklin Square, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,860
Int. Cl. D05b *35/00;* **D05c** *7/08*
U.S. Cl. 112—139 **2 Claims**



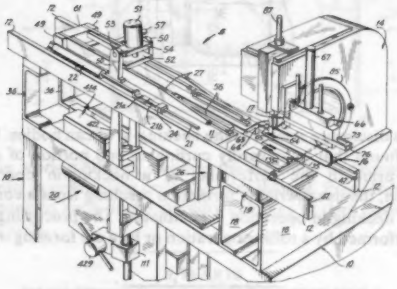
A detachable foot-mounted fabric strip folding and cording structure of compact design, efficiently impartable of a fold to a fabric and feedable of a cord into the vertex of the fold and shaped to maintain the fold and to avoid wrinkles and nonalignment while concurrently directing the folded corded fabric precisely to a needle-sewing point under receiving upwardly turned toes of forks of the foot on which the cording structure is mounted.

3,763,802

POCKET WELTING MACHINE

Rodney W. Champney; Leighton R. McKeen, and Louis William Breck, Jr., all of El Paso, Tex., assignors to Farah Manufacturing Company Inc., El Paso, Tex.

Filed Dec. 17, 1971, Ser. No. 209,099
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 51 Claims



A welt forming machine has been provided which is a combination comprising: a sewing machine including a looper, a needle bar and a stop motion means for a sewing machine needle bar; feed means for feeding work piece for said sewing machine including means for varying the rate of feeding of said feed means independently of a rate of sewing, said feed means feedingly urging a work piece transversely to said sewing machine between a first feed and a second feed position; means for clamping a work piece onto said feed means and operatively interconnected with said feed means; means for holding a welt-defining work piece operatively interconnected with said feed means and said means for clamping, said holding means transversely depending from said sewing machine; means for folding said welt-defining work piece operatively interconnected with said feed means and said clamping means and articulatingly interconnected with said clamping means; means for center cutting said work pieces operatively interconnected with said sewing machine and said feed means between said first and second feed position; means for engaging said stop motion means; means for engaging an upper thread of said sewing machine upon completion of sewing of said work pieces; means for cutting said upper thread operatively interconnected with said means for engaging said upper thread; means for indexing said feed means; means for end cutting said work pieces operatively interconnected with said means for indexing said feed means; and means for returning said feed means to said first feed position—by means of the above combination, weltings such as encountered in pants back pockets, button holes, etc. are produced.

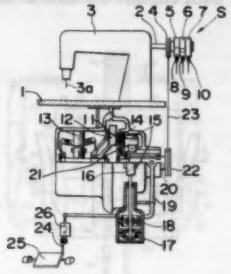
3,763,803

SEWING MACHINE ELECTRICAL DRIVE DEVICE

Masao Matsuda, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Nov. 27, 1972, Ser. No. 309,941
Int. Cl. D05b *69/22*
U.S. Cl. 112—219 A 3 Claims

A sewing machine drive device in which a current interrupter comprising conducting rings, part of whose peripheries are insulated, and brushes, each being in contact with the periphery of the corresponding ring, is employed to make it possible to stop a sewing machine needle accurately in a desired position.

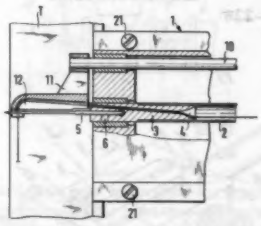


3,763,804

METHOD AND APPARATUS FOR THREADING YARN ENDS INTO THE WORKING NEEDLES OF EMBROIDERY STITCHING AND SEWING MACHINES

Rudolf Reich, 545 An der Ringstr. 6, Neuwied, Germany

Filed Apr. 14, 1972, Ser. No. 244,206
Claims priority, application Germany, Apr. 29, 1971, P 21 21 223.7
Int. Cl. D05c *11/00*; D05b *87/02*
U.S. Cl. 112—225 11 Claims



The invention concerns a method and an apparatus for threading of yarn ends into the working needles of embroidery, stitching and sewing machines. This is achieved by clamping the end of the yarn which is to be inserted, to the open end of a compressed air channel; the end of this channel is connected to a hollow needle bar, and, after its release, the yarn is guided by compressed air through the hollow needle bar to a threading loop which can move through the eye of the needle.

3,763,805

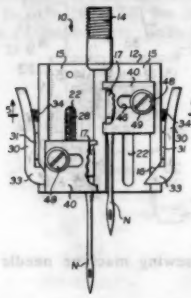
QUICK RETRACTING SPACE SELECTABLE MULTIPLE NEEDLE HOLDER

Karl Weigert, Englishtown, N.J., assignor to Reliable Attachment Co., Inc., New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,256
Int. Cl. D05b *55/02*
U.S. Cl. 112—226 9 Claims

A multiple needle sewing machine attachment for selectively holding a plurality of needles subject to being spaced at a desired distance from each other either in operative stitch forming position, or in an inoperative position so as to permit one or more of the needles to be made inoperative as material is fed through the machine, whereby the direction of stitching may be changed without having any cross-over of the rows of stitches. Each needle is held by a needle block having a positioning slot through which a screw extends to adjustably retain the needle block on a slide member in a slideway formed in

the body of the attachment, with the slide member biased by a spring, to a needle retracted position in the slideway. A selectively operable latch engages the slide member to retain the



needle in an extended operative position. However on release of the latch the needle is quickly retracted to an inoperative position by the spring.

3,763,806

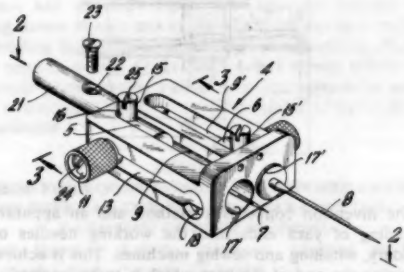
SEPARATELY RETRACTABLE PAIRED NEEDLES

Jack E. Shuffield, Norwood, N.J., assignor to C & W Sewing Machine, New York, N.Y.

Filed Oct. 16, 1972, Ser. No. 297,889

Int. Cl. D05b *55/02*

U.S. Cl. 112—226 **10 Claims**



In a preferred embodiment of the present invention, a paired sewing machine paired needle structure includes separately retractable needles lockable in the extended position as well as lockable in the retracted position, for the turning of corners during the sewing operation, the extendable and retractable shaft of each needle or mounting structure therefor having, in addition to the locking and unlocking projection arm and spring-biased locking-unlocking head on the arm, a separate guide projection extendable through a separate slot from the locking and unlocking projection arm and at about right angles thereto, thereby providing improved sturdiness and longivity and precision in operation thereof, the guide projection being threaded as a male member and the respective needle mounting structure having a female threaded aperture extending through to the needle mounting channel whereby the tightening of the guide projection is lockable of the respective needle into its needle mounting structure, and the guide projection aperture being located along the needly longitudinal axis of the needle structure at a point in non-alinement with the locking projection arm whereby cracking of the needle mounting structure by tightening of the guide projection and/or by the screw mounting of the locking projection arm is avoided.

3,763,807

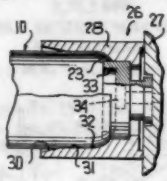
METHOD OF FORMING NECKED-IN CAN BODIES

John T. Hilgenbrink, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,264

Int. Cl. B21d *51/00*

U.S. Cl. 113—120 R **7 Claims**



This disclosure relates to the necking-in of can bodies. It has been found that by inwardly curling an end portion of a can body prior to the performing of a necking-in operation thereon, the usual wrinkle formation resulting from a conventional necking-in operation is eliminated. The precurling may be performed by a rolling operation or by a die forming operation.

3,763,808

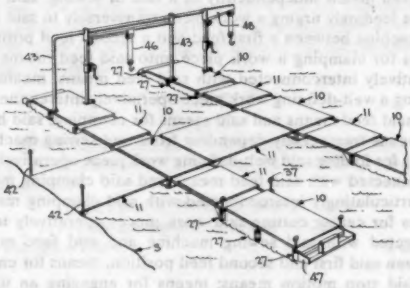
UNIVERSAL MARINE MODULE

Richard H. Smith, Sr., 2926 Sing Sing Rd., R.D. 1, Elmira, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,079

Int. Cl. B63b *35/00*

U.S. Cl. 114—0.5 F **9 Claims**



A marine module capable of being interconnected with other like modules by means of a coupling platform or platforms into any number of different arrangements for a wide variety of uses, each module comprising a floatable, hollow, metal construction having uniformly spaced coupling brackets thereon, and each platform having connectors thereon, the modules and platforms being rigidly interconnected through the coupling brackets and connectors. Superstructure supports can also be used to couple platforms together.

3,763,809

SEMI-SUBMERSIBLE WORK PLATFORM

Hector V. Pazos, 2728 Valentine Ct., New Orleans, La.

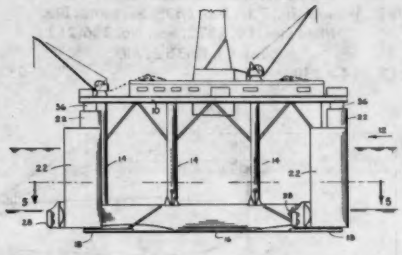
Filed May 25, 1972, Ser. No. 263,012

Int. Cl. B63b *35/00, 35/44*

U.S. Cl. 114—.5 D **6 Claims**

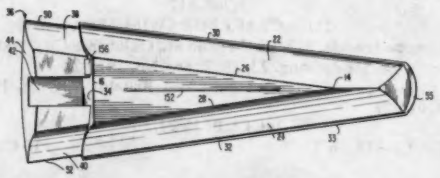
A semi-submersible work platform comprising a deck with oppositely disposed projections extending outwardly. Twin hull members, adapted to float said deck, are transversely spaced and braced apart, and mount upright columns that are spaced and secured around the perimeter of the working deck. The hulls are rectangular in cross-section for damping motion and pointed at both ends for double-ended use in moving. Motion damping fins are mounted on said hulls and extend outwardly and parallel to the deck projections and are vertically

aligned therewith. Hydrodynamically shaped stability columns are turnably mounted between each of said deck projections and associated damping fins for the triple use of reducing drag



on the work platform, steering the rig while underway, and partially in controlling draft and trim thereof. Propulsion may be added to each of the stability columns at their respective lower ends.

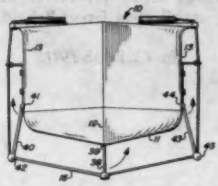
3,763,810
HIGH SPEED BOAT WITH PLANING HULL
Peter R. Payne, Silver Spring, Md., assignor to Blade Hulls, Inc., Rockville, Md.
Continuation-in-part of Ser. No. 167,737, July 30, 1971, abandoned. This application Mar. 24, 1972, Ser. No. 237,852
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 **21 Claims**



A boat capable of cutting through rough waves at high speed with astonishing stability has a hull provided with a flat planing surface which in plan is the shape of a thin wedge or delta. The sides of the boat rise upwardly and outwardly with a simple concave curvature from the two edges leading from a knife edge bow at the point of the wedge. The slender wedge shape moving through the water at high speeds develops continuous spray sheets up its sides which are intercepted by the outwardly curving portions of the hull sides. Spray rails or deflectors may also be utilized to intercept the spray sheet, such deflectors being inclined at a small angle to the bottom of the planing surface. The knife edge bow rises upwardly and forwardly with a concave curvature from the point of the wedge and eventually terminates in a forwardly sloped bow transom. A keel skeg minimizes side slipping. A stern transom, which rises substantially perpendicular to the trailing edge of the delta or wedge may have a rearwardly extending bustle secured thereto for buoyancy and roll stability at low speeds.

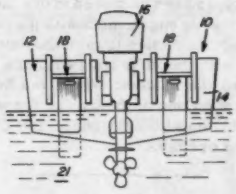
3,763,811
FLEXING HYDROFOIL
Phillip J. Danahy, 12801 Prestwick Drive, Tantallon, Md.
Filed Aug. 3, 1972, Ser. No. 277,743
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 H **12 Claims**

This specification discloses a flexing hydrofoil that consists essentially of a thin flexible blade that is secured to the underside of a boat hull transversely thereof and in spaced relation thereto by three or more struts together with tensioning cables connected to the ends of the blade. Provision may also be made for the blade to be moved into engagement with the hull when the hydrofoil is to be ineffective.



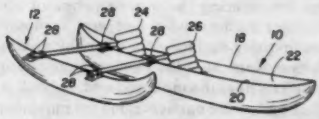
The present invention relates to hydrofoils that are mounted on a boat hull and is concerned primarily with a flexing hydrofoil that includes as a characteristic and essential element a flexing blade.

3,763,812
TROLLING APPARATUS FOR BOATS
Loyal T. Rowe, P.O. Box 4, McCammon, Idaho
Filed Mar. 2, 1972, Ser. No. 231,165
Int. Cl. B63h *25/44*
U.S. Cl. 114—145 A **7 Claims**



A trolling board for a boat has a plate for creating drag and retarding the movement of the boat through water, and a pair of spring channels for slidably and pivotally receiving a longitudinally extending bar connected to an end of the plate. Preferably, a pair of boards are symmetrically mounted on the transom of the boat. The plates are arranged to pivot about a horizontal axis which is parallel to the transom when a force is applied thereto which is in excess of a predetermined force.

3,763,813
INFLATABLE CANOE AND OUTRIGGER
Gilbert J. Holtz, 182 Tibbetts Road, Yonkers, N.Y.
Filed Jan. 24, 1973, Ser. No. 326,530
Int. Cl. B63b *43/14*
U.S. Cl. 114—123 **5 Claims**



An inflatable body arranged to enhance the stability of an inflatable canoe by being positioned as an outrigger in relation thereto, said positioning and interconnection of these inflatables being achieved without metal hardware and similar such structure.

3,763,814

SHIPS HATCHES

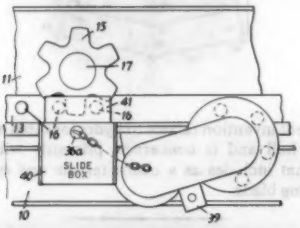
Raymond Nagel, London; Norman Wharton, Coulsdon, and Thomas Cockburn, Purley, all of England, assignors to Hatchway Dynamics Limited, Croydon, Surrey, England

Filed Sept. 21, 1971, Ser. No. 182,450

Claims priority, application Great Britain, Sept. 23, 1970, 45,394/70

Int. Cl. B63b 19/18

U.S. Cl. 114—202 8 Claims



An arrangement for raising and lowering hatch covers into and out of sealing contact with a supporting structure round the hatch includes a series of cam elements upon which the supporting wheels of the hatches come to rest when the hatch covers are in position closing the hatches. The cam elements are linked together by cables or chains so as to be operable in unison by a motor, and can be moved in one direction to lower the hatches into sealing engagement with the supporting structure and in the other direction to raise the hatches out of sealing engagement with the supporting structure ready for hauling away to open the hatches. Where the hatch covers are hauled by a motor on one of the covers, the same motor may be used in conjunction with a disconnectable drive mechanism to drive the cables or chains.

3,763,815

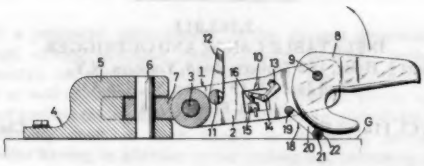
SHIP DRAWING AND STAYING DEVICE

Tomoshi Hodate, Tokyo, Japan, assignor to Sagita Sangyo Kabushiki Kaisha, Tokyo, and Sugiue Kenki Kabushiki Kaisha, Takamatsu-City, both of Japan, part interest to each

Filed Mar. 17, 1972, Ser. No. 235,662

Int. Cl. B63b 21/04

U.S. Cl. 114—230 3 Claims



Apparatus for securing the mooring rope of a ship has an elongated carrier frame whose one end is mounted on the horizontal supporting surface of a wharf by means of a pivot which permits movement of the carrier frame about a horizontal, transverse axis near the mounted end. A hook is pivoted to the other, free end of the carrier frame for movement between a first position in which its bight is open toward the mounted end of the frame and a second position in which the bight is open in the opposite direction, the bight being spaced from the pivot axis of the hook so that a rope held in the hook in the first position tends to turn the hook into its second position, such movement being prevented by a releasable locking mechanism. A cam mechanism partly on the hook and partly on the carrier frame moves the free end of the carrier and the hook thereon upwardly away from the supporting surface when the hook moves from the first to the second position.

3,763,816

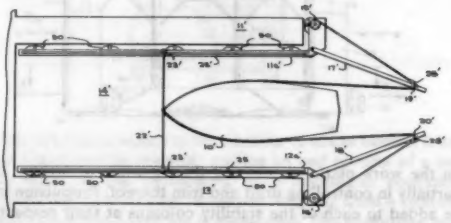
AUTOMATIC DOCKING SYSTEM

Clyde H. Wilson, Jr., P.O. Box 1635, Sarasota, Fla.

Filed Oct. 10, 1972, Ser. No. 296,212

Int. Cl. B63b 21/00

U.S. Cl. 114—230 25 Claims



An automatic boat docking system for guiding and docking a boat in a boat slip; including a pair of laterally spaced dock structures defining a boat slip therebetween and having a pair of pivoted retaining booms at the outer ends of the dock structures adjacent the entrance to the slip movable between a closed position transversely spanning the slip entrance and an open position. A cross-rope movable along the slip and a harness rope are engaged by an entering boat to swing the booms to the closed position behind the boat and wrap the boat in transversely centered position by the harness rope.

3,763,817

TOW-CRAFT FOR SWIMMER

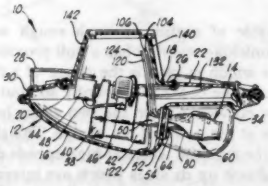
Alphons Francis, 1121 N.W. 82nd St., Oklahoma City, Okla.

Filed Aug. 23, 1972, Ser. No. 282,923

Claims priority, application Great Britain, Aug. 26, 1971, 40, 014/71

Int. Cl. B63b 21/56

U.S. Cl. 115—6.1 10 Claims



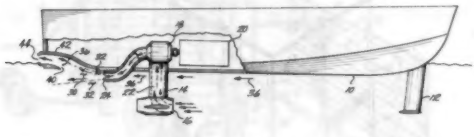
A tow-craft for towing a swimmer through the water which includes a buoyant housing and a drive assembly carried by the housing including a gasoline engine mounted in the housing and drivingly connected to an impeller assembly mounted on the lower aft end of the housing. The impeller assembly is connected to the engine by means of a shaft and includes a three-bladed axial propeller-type impeller mounted on one end of the shaft and surrounded by a substantially cylindrically shaped tube. A plurality of inlet vanes are mounted in the tube just forward of the propeller and a plurality of outlet vanes are mounted within the tube just aft of the propeller. The tube includes an inwardly converging throat portion just aft of the propeller. In one form the buoyant housing is in the form of a molded hollow hull with a handlebar disposed across the aft end portion thereof with a throttle control mounted thereon. Another form of the buoyant housing includes a rigid hollow central portion surrounded by an inflatable floatation chamber such as a conventional inner tube. The tow-craft includes a self-bailing device and means for cooling and muffling the exhaust gases from the engine and disposing of such gases beneath the surface of the water.

3,763,818

METHOD AND APPARATUS FOR THE RECOVERY OF WATERJET POWER FOR MARINE VESSELS

Hugh J. Davis, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 20, 1972, Ser. No. 235,895
Int. Cl. B63h *11/02*
U.S. Cl. 115—11 7 Claims



The method of improving the net thrust minus drag of a marine vessel at a given engine performance by creating a secondary jet flow consisting of (1) a portion of the primary jet water, (2) ambient water induced by the primary jet water, and (3) ambient water captured by the ram action when forward motion is achieved by the vessel.

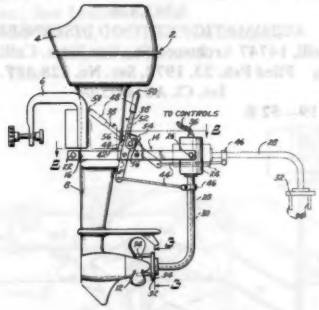
The apparatus includes a duct having an inlet means located at a certain distance aft of the primary jet and an outlet with nozzle means to augment in producing the secondary jet.

3,763,819

TROLLING ATTACHMENT FOR OUTBOARD MOTORS

Kenneth R. Mays, Rt. 2, St. James, Minn.

Filed Apr. 25, 1972, Ser. No. 247,355
Int. Cl. B63h *21/26*
U.S. Cl. 115—17 5 Claims



An electric motor drives a flexible drive shaft in a curved rigid transmission tube fixed to the motor. The motor and tube are pivoted to a bracket that can be clamped to the propellor housing of an outboard motor so that the end of the flexible shaft can be swung to or from the propellor of the outboard motor. The flexible shaft drives a driving member releasably engageable with the propellor for rotating the same at low speed, for trolling.

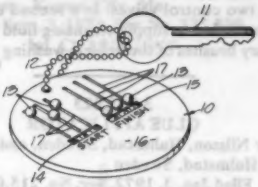
3,763,820

KEY TAG

Jim Sage, 2112 Strand, Manhattan Beach, Calif.

Filed Feb. 3, 1972, Ser. No. 223,169
Int. Cl. G09f *5/00*
U.S. Cl. 116—135 1 Claim

A tag to be carried on a key chain includes finger adjustable members to position numbers within a pair of viewing windows relating to start and finish mileages, respectively, for a motor trip.

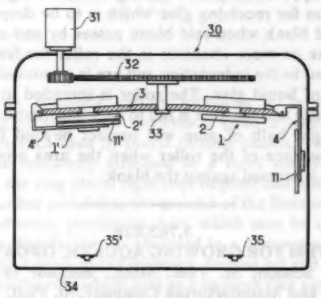


3,763,821

VACUUM DEPOSITION APPARATUS

Guy Gorinas, St. Michel sur Orge, and Claude Ernu, Bobigny, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Dec. 21, 1972, Ser. No. 317,307
Claims priority, application France, Dec. 21, 1971, 7146010
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 9 Claims



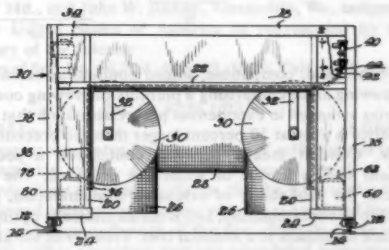
Vapor deposition apparatus includes a workholder formed as a shallow receptacle adapted to hold a disc type substrate. Receptacle sealing means is provided by a pivotally mounted cover member.

3,763,822

FLUID DISPENSING SYSTEM FOR VEHICLE WASHING APPARATUS

William Harvey Thompson, Mentor, Ohio, assignor to Trans-Clean, Inc., Glenview, Ill.

Filed Oct. 15, 1971, Ser. No. 189,658
Int. Cl. G07f *13/00*; B60s *3/04*
U.S. Cl. 118—73 7 Claims



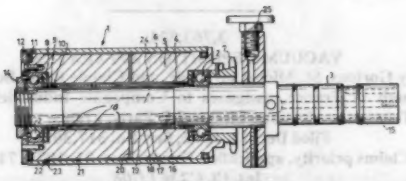
A detergent, rinse and wax application system for use in apparatus for washing the surfaces of a vehicle. The three func-

tions of supplying a cleansing mixture, a wax mixture, and rinse fluid through a series of conduits connected to a movable vehicle washing apparatus are controlled by a manifold comprising only two control valves. In a second embodiment, the manifold is modified to supply cleansing fluid directly to a plurality of rotary brushes of the vehicle washing apparatus.

3,763,823
GLUE APPLICATOR

Jan Ingemar Nilsson, Halmstad, Sweden, assignor to Sprinter Pack AB, Halmstad, Sweden

Filed Jan. 3, 1972, Ser. No. 215,041
Int. Cl. B44d *1/20*
U.S. Cl. 118—258 4 Claims

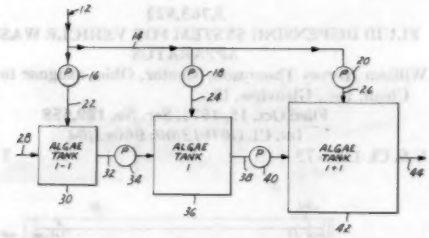


A glue applicator with a rotating roller having at least one indentation for receiving glue which is to be desposited on a cardboard blank when said blank passes by and contacts the roller. One or more channels in the roller for feeding liquid glue extend to the indentation and are in communication with a source of liquid glue. The roller is intended to be rotated continuously and the glue is fed to each indentation to fill it so that a slight bulb of glue will project beyond the circumferential surface of the roller when the area around the indentation is pressed against the blank.

3,763,824
SYSTEM FOR GROWING AQUATIC ORGANISMS

David J. Schoon, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 30, 1971, Ser. No. 203,257
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 4 Claims

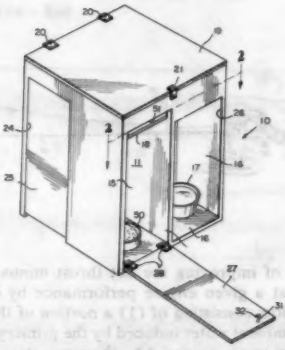


A controlled, compatible, staged continuous-batch system for growing algae comprising a plurality of growing containers in series arranged in exponential progression such that each in the series is at least 30 percent larger than the preceding container. Conduit means between containers, a source of nutrient and, a source of water are provided. The system reduces the probability of extensive contamination, permits isolation of contamination, and is mathematically optimized to produce organisms at a minimal cost. Transfer of the algae occurs from one container to another when concentration of the algae in a first container reaches 10^6 to 10^7 cells/cm^3, after which transfer from successive containers takes place when that concentration level is serially reached.

3,763,825
ANIMAL FEEDER

William N. Fleming, 542 Arden Drive, Indianapolis, Ind.

Filed June 14, 1972, Ser. No. 262,796
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.12 8 Claims

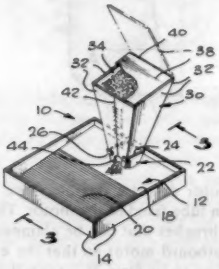


A pet feeder comprising a cabinet internally divided into a plurality of separate compartments opening individually through the external perimeter of the cabinet, a bottom-hinged door for each of certain of the compartments, each door being biased away from closed position, a latch device for each door, and a timer operative to release the latch devices successively and at stated time intervals. In a preferred embodiment of the feeder, the timer includes an arm which sweeps a calibrated dial once in 72 hours and the latch-release devices are peripherally spaced from each other by 120° about the dial.

3,763,826
AUTOMATIC PET FOOD DISPENSER

Sam Portelli, 14747 Archwood St., Van Nuys, Calif.

Filed Feb. 23, 1972, Ser. No. 228,497
Int. Cl. A01k *05/00*
U.S. Cl. 119—52 R 10 Claims



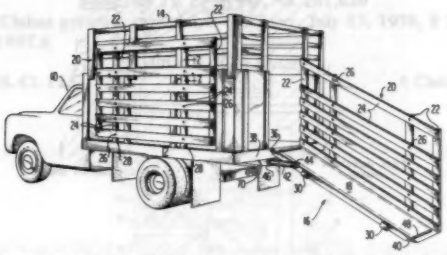
An automatic pet food dispenser, preferably portable, comprises an inclined feed board, preferably grooved for food retention, a flat base and raised sides connected to the board, a raised collar secured to the board adjacent the rear end of the upper surface thereof and a funnel shaped hollow container, preferably having a closable top, the container having an opening in the lower front portion thereof substantially matching a like opening in the collar. The container may be fixedly or releasably secured to the collar and contains feed measuring means on at least one surface thereof.

3,763,827

LIVESTOCK LOADING CHUTE

Edward J. Burkart, 705 Summit Ave., Connersville, Ind.

Filed Jan. 28, 1972, Ser. No. 221,535
Int. Cl. B60p *1/52*
U.S. Cl. 119—82 8 Claims



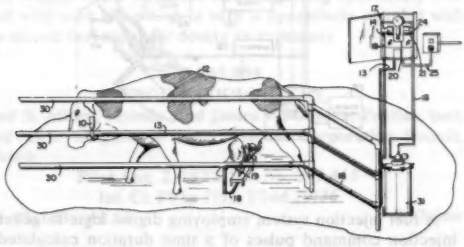
A loading chute primarily for loading livestock on a truck is presented. The chute includes a ramp with detachable sides and twin support members pivotally connected adjacent the forward end of the ramp and slidably retained in a track mounted beneath the truck bed. When in the loading position the forward end of the ramp abuts the end of the truck bed while the rear end rests on the ground. Vertical support therefor is provided by the supporting members and the track. When the chute is disassembled the sides are removed and attached to the sides of the truck. The ramp is then pivoted about the support members into a horizontal position and retracted into a storage area beneath the truck bed between the rails of the track.

3,763,828

COW TREATING DEVICE

Peter R. Tighe, Oakland, Calif., assignor to Dari-Spray Products, Inc., San Leandro, Calif.

Filed Dec. 10, 1971, Ser. No. 206,624
Int. Cl. A01k *29/00*
U.S. Cl. 119—158 6 Claims



A device for applying liquid to a cow's udder including a narrow passageway through which the cow can pass in one direction, a nozzle in the passageway positioned so that the cow must step over it, and a photo-electric cell arranged to actuate one of two servomechanisms. The servomechanisms in turn operate valve means carrying high pressure liquid through conduit means to the nozzle and the cell is positioned so that the light beam is broken when the cow's udder is above the nozzle. Timing devices are actuated by the photoelectric cell and are connected to the first servomechanism to time the period that the valve means is open, and are also connected to the second servomechanism to time the period before the valve means can be reopened to avoid accidental actuation, is disclosed.

3,763,829

CAGE-TYPE LIVESTOCK DUSTER

William C. Cortner, Kansas City, Mo., assignor to Alley-Johnson Company, Kansas City, Mo.

Filed Sept. 3, 1971, Ser. No. 177,570
Int. Cl. A01k *29/00*
U.S. Cl. 119—159 14 Claims

A cage-type livestock duster including a horizontally disposed ring arranged for suspension from a single point above the livestock area by plural flexible chains. The single point may be resiliently attached to a fixed member by a spring. From the ring plural rigid rods depend and join to support a bumper bar parallel to the ground of the livestock area. In one embodiment, powder or dust, which may be used, for instance, as a disinfectant, is enclosed in a conventional dust bag of the type known in the livestock dusting art and this bag is encircled by the ring which acts as a bumper ring against the bag when livestock moves the bar. In another embodiment, the dust or powder is enclosed in a flat top dust receptacle attached at its periphery to a suspended ring. In this embodiment when livestock bumps the parallel bar, the receptacle is jarred and dust is sifted therefrom in a manner similar to a flour sifter. The flat top dust receptacle may have single or multiple compartments with a top zipper over each for ready filling with the same or different type dust.

3,763,830

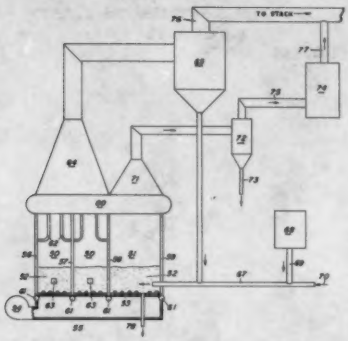
APPARATUS FOR BURNING SULFUR CONTAINING FUELS

Ernest B. Robinson, Silver Spring; Shelton Ehrlich, Bowie, both of Md., and John W. Bishop, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Interior

Division of Ser. No. 66,724, Aug. 25, 1970. This application Jan. 24, 1973, Ser. No. 315,445
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D 5 Claims

Combustion apparatus for the removal of sulfur oxides from fuels containing sulfur. A first and a second fluidized bed boiler having heat exchange surfaces, that burn the sulfur fuels are positioned adjacent each other with the second bed having less heat exchange surface than the first. Each bed has solid particulate sulfur acceptors that are circulated between the two beds. Heat exchange wall members between the beds semi-isolate them from each other such that there is little or no mixing of the gaseous combustion products from each

boiler. The circulation between beds may be accomplished by ports in the exchange wall below the top of the fluidized beds.

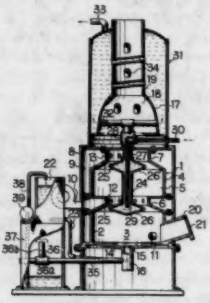


The end result is the gas emitted to the atmosphere from the beds after additional processing is depleted in sulfur oxides.

3,763,831
HEAT EXCHANGER

Nobutsugu Kobayashi, Tokyo, Japan, assignor to Shoei Kabushiki Kaisha, Tokyo, Japan

Filed June 27, 1972, Ser. No. 266,741
Claims priority, application Japan, July 30, 1971, 46/67259; Aug. 9, 1971, 46/71160
Int. Cl. F22b *7/00*
U.S. Cl. 122—165 5 Claims



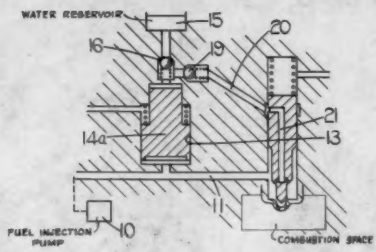
Herein disclosed is an improved heat exchanger for use in a liquid-fuel combustion furnace wherein heat exchange is effected through transfer of heat from hot water to cool water with the aid of the combustion heat in the combustion chamber of the furnace.

3,763,832
INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Ivor Fenne, Greenford, England, assignor to C.A.V. Limited, Birmingham, England

Filed Nov. 5, 1971, Ser. No. 196,162
Claims priority, application Great Britain, Nov. 5, 1970, 52,703/70
Int. Cl. F02d *19/12*; F02m *43/00, 43/04*
U.S. Cl. 123—25 C 6 Claims

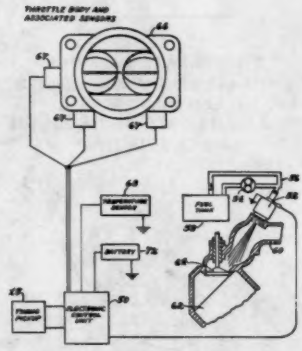
A fuel injection system for an internal combustion engine including a pump which delivers fuel through a pipeline to an injection nozzle mounted on the engine. Also provided is a stepped cylinder which accommodates a complementarily stepped piston. The wider end of the cylinder is open to the aforesaid pipe line and the narrower end of the cylinder communicates with a source of fluid. A conduit is provided and through which fluid from the narrower end of the cylinder is displaced during inward movement of the piston, the displaced fluid eventually flowing to the engine.



3,763,833
FUEL INJECTION SYSTEM

Todd L. Rachel, Elmira, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 815,800, April 14, 1969, abandoned.
This application May 17, 1971, Ser. No. 144,268
Int. Cl. F02d *5/00*
U.S. Cl. 123—32 EA 27 Claims



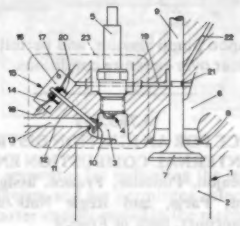
A fuel injection system employing digital logic to generate injection command pulses of a time duration calculated to provide a precise quantity of fuel to meet presently existing, varying engine requirements is disclosed herein. The system employs a first or injector selection circuit operative to select an injector or injector group for injection and a second or adaptive delay circuit to generate an injection command. The circuits are electronically intercoupled to provide for substantially simultaneous application of the selection pulse and injection pulse to the proper injector group and to eliminate the need for a mechanical distributor arrangement to select the proper injector group. The time duration or delay signal is generated by a function generator producing an output as a known function of time with injection occurring during the time it takes for the output to reach a pre-determined, selected, threshold value. In order to compensate for varying supply voltages, the second circuit includes means for providing automatic voltage compensation.

3,763,834

CYLINDER ARRANGEMENT HAVING A COMBUSTION AND A PRECOMBUSTION CHAMBER THEREIN AND A SEPARATE FUEL SUPPLY OR DOSING MEANS THEREFOR

Istvan Geiger, and Gerd Decker, both of Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 12, 1971, Ser. No. 161,629
Claims priority, application Germany, July 13, 1970, P 20 38 097.6
Int. Cl. F02b *19/00*
U.S. Cl. 123—32 SP 6 Claims



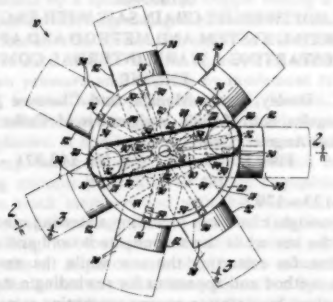
In a combustion engine for motor vehicles a cylinder arrangement having a combustion chamber and a precombustion chamber in communication therewith and receiving the spark-plug with its electrodes, a first fuel supply or dosing arrangement opening into the combustion chamber and a second fuel supply or dosing arrangement opening into the precombustion chamber, an operating means associated with the first and second fuel dosing means and having a member following the different predetermined positions representative of the operating state of the first fuel supply or dosing arrangement, such member being constructed to define the operating state of the second fuel supply or dosing arrangement, wherein such member comprises a stem assuming different and predetermined axial positions and having a cross sectional profiling thereon, means coupled to the cross sectional profiling and defining the predetermined operating states of the second fuel dosing arrangement, and wherein further the cross sectional profiling is formed as a cam, an operating bar slidably mounted against the force of a spring transversely with respect to the stem, the camming being operatively coupled with such bar which in turn is operatively coupled with the second fuel supply or dosing arrangement.

3,763,835

ENGINE COOLING FAN

Fred H. Miller, Livonia, and James W. Goyette, Pontiac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 2, 1972, Ser. No. 277,415
Int. Cl. F01p *7/02*; F04d *29/36*
U.S. Cl. 123—41.11 8 Claims



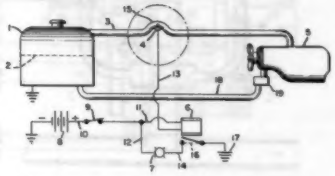
The drawings illustrate an engine cooling fan which decreases in overall diameter in response to increased engine speed as a result of a centrifugal weight-actuated camming arrangement.

3,763,836

COOLANT LOSS AND COOLANT PUMP MALFUNCTION DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Helmut Guehr, Rt. 2, Box 436, Charleston, W. Va.

Filed Dec. 29, 1970, Ser. No. 102,407
Int. Cl. F01p *5/14*, *11/14*; H01f *27/02*
U.S. Cl. 123—41.15 2 Claims



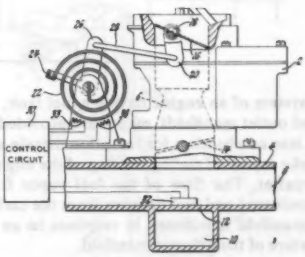
Coolant loss and coolant pump malfunction in liquid cooling systems of internal combustion engines can be determined by placing a condition sensing device in a coolant inlet passage to a radiator assembly at a point above the coolant level in the radiator assembly and connecting to such condition sensing device an electrical detection circuit responsive to the conditions sensed by the sensing device.

3,763,837

AUTOMATIC CHOKE CONTROL

Vincent A. Orlando, Clearwater, Fla., assignor to General Motors Corporation, Detroit, Mich.

Filed July 14, 1972, Ser. No. 272,009
Int. Cl. F02m *1/12*
U.S. Cl. 123—119 F 1 Claim



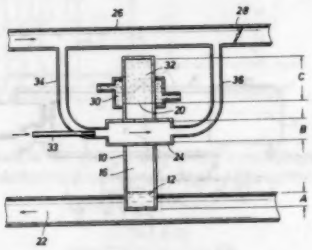
A control for an automatic choke with a bimetallic element to determine choke position. In a feedback control system, electrical signals from a temperature sensor at a control point and another at the bimetallic element are compared; and the difference is used to control electric power to a heater near the bimetallic element so that the temperature of the bimetallic element varies in accordance with the temperature at the control point.

3,763,838

CARBURETOR HAVING A HEAT PIPE FOR VAPORIZING FUEL

Roger Lindsay, Tattenhall; Alun Thomas, Wirral, both of England; Ian C. Finlay, Glasgow, and John L. Wilson, East Kilbridge, both of Scotland, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,522
Claims priority, application Great Britain, Dec. 23, 1970, 61,041/70
Int. Cl. F02m *13/06*
U.S. Cl. 123—122 AA 14 Claims



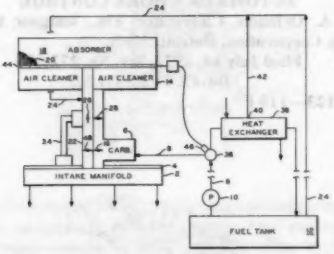
A fuel vaporizing system for spark ignition internal combustion engines wherein a heat pipe filled with a narrow-range boiling point fluid is disposed to transfer heat from a heat zone to a vaporizing zone. The liquid fuel is vaporized in the vaporizing zone prior to being mixed with air.

3,763,839

FUEL SYSTEM APPARATUS AND METHOD

Henry E. Alquist, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 24, 1971, Ser. No. 201,720
Int. Cl. F02m *17/08*; F02b *77/00*
U.S. Cl. 123—136 10 Claims



In a fuel system of an engine having a fuel tank, carburetor, and inlet and outlet manifolds, means are provided for passing fuel vapors into an absorber for retention therein and delivery into the intake manifold during starting of the engine and for a period thereafter. The flow of the fuel vapor from the absorber is terminated and fuel delivery from the carburetor into the intake manifold is initiated in response to an increase in the temperature of the exhaust manifold.

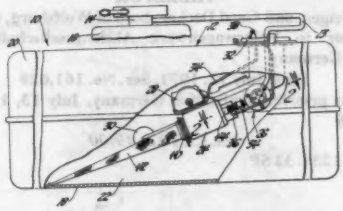
3,763,840

FUEL LINE SHUT OFF VALVE FOR PRESSURIZED FUEL SYSTEMS

Frederick J. Schimmelpfenig, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 22, 1972, Ser. No. 265,292
Int. Cl. F02m *59/00*; F02b *33/00*
U.S. Cl. 123—136 3 Claims

A fuel line shut off valve for a pressurized fuel system differentiates between fuel pump pressure, fuel tank pressure, and fuel line pressure to prevent fuel flow when the pump is not operating, maintain fuel pressure in the fuel line to ensure a fuel supply upon pump startup, and permit fuel bleed from the fuel line under over-pressure conditions.

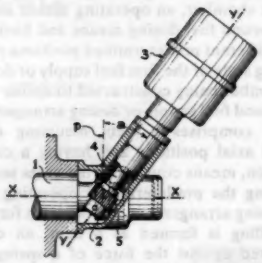


3,763,841

DRIVE DEVICE FOR AN IGNITION DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE

Armand Froumajou, Pontoise, France, assignor to Automobiles Peugeot, Paris, and Regie Nationale Des Usines Renault, Billancourt, both of France

Filed Feb. 18, 1972, Ser. No. 227,459
Claims priority, application France, Apr. 30, 1971, 7115579
Int. Cl. F02p *7/00*
U.S. Cl. 123—146.5 A 6 Claims



Device for connecting the camshaft of an internal combustion engine to the driving shaft of an ignition distributor. The device comprises a driving gear on the camshaft and a driven gear connected to rotate the driving shaft. The driving gear has helical teeth and the driven gear straight teeth which are parallel to its axis of rotation and meshed with the helical teeth. The driven gear has an axis of rotation which is inclined relative to a plan perpendicular to the axis of rotation of the driving gear.

3,763,842

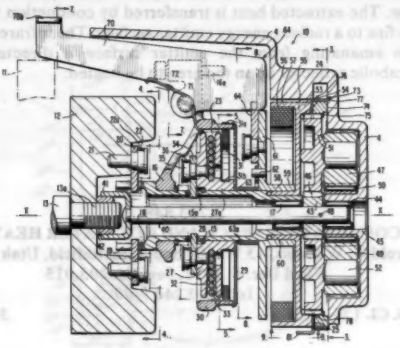
LIGHTWEIGHT CHAIN SAW WITH ENGINE RESTARTING SYSTEM AND METHOD AND APPARATUS FOR RESTARTING A WARM INTERNAL COMBUSTION ENGINE

James L. Dooley, Santa Monica, and Clarence J. Harasta, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed May 5, 1971, Ser. No. 140,371
Int. Cl. F02n *5/00*
U.S. Cl. 123—179 S 12 Claims

A lightweight chain saw including a starting mechanism for starting the saw while the saw engine is cold and a restarting mechanism for restarting the saw while the saw engine is warm. A method and apparatus for rewinding a starter spring characterized by a starter energy generating system which is continuously engaged with a starter spring and by a friction clutch which is continuously engaged with and operable to dis-

able a reaction device in order to divert energy away from the starter spring.



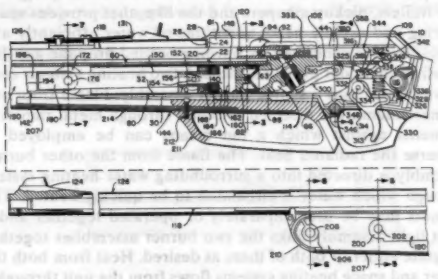
Methods and apparatus for indicating the level of energy in an engine mechanism and for permitting selective adjustment of the level of starter energy stored in the mechanism.

3,763,843

PNEUMATIC GUN

Earl L. Fisher, Bentonville, and Ronald W. Joyce, Springdale, both of Ark., assignors to Victor Comptometer Corporation, Chicago, Ill.

Filed June 16, 1972, Ser. No. 263,641
Int. Cl. F41b *11/00*; F41f *1/04*
U.S. Cl. 124—13 A **9 Claims**



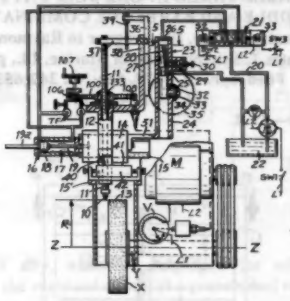
There is herein disclosed a pneumatic gun of the type having an air storage chamber selectively connectable to a firing chamber by a valve. The valve is movable between a closed position and an open position by a trigger actuated control lever. The control lever is movable between cocked and uncocked positions by a manually slidable bolt and is latched in a cocked position by a spring loaded trigger having a latching finger in constant abutting engagement with the control lever. There is a lost motion connection between the control lever and the valve such that the valve is openable by the combined effects of air pressure and a spring by movement relative to the control lever. The storage chamber is formed between cylindrical block members held in spaced relationship in a common cylinder. A combination check valve and sealing annulus is compressibly mounted between the block members. The sealing annulus portion is in sealing engagement with each of the block members and with the common cylinder. Additionally, the sealing annulus portion functions as the member holding the block members in the spaced relationship mentioned above. A piston assembly is also mounted in the common cylinder and connected to a piston rod by a lost motion connection enabling movement of the piston assembly relative thereto under the influence of a resilient compressible annulus.

3,763,844

APPARATUS AND METHOD FOR DRESSING GRINDING WHEELS

Thomas F. Stevens, Shrewsbury, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed July 8, 1971, Ser. No. 160,867
Int. Cl. B24b *53/08*
U.S. Cl. 125—11 PH **19 Claims**



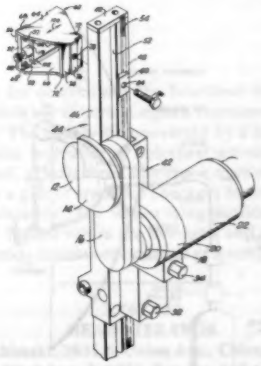
Method and apparatus for truing or dressing a grinding wheel which is rotated at a progressively increasing angular velocity to compensate for decreasing wheel diameter so that a constant peripheral wheel speed is maintained, the speed of traverse of the dressing tool along the grinding face of the wheel is controlled in accordance with wheel diameter. This is achieved by means responsive to any change in the radial position of the dressing tool with respect to the wheel axis, and controlling the traverse speed of the truing tool accordingly, so that for a particular sequence of repetitive grinding operations the traverse speed is inversely proportional to the wheel diameter, whereby the grinding face is repeatedly dressed to substantially a uniform surface finish during the useful life of the grinding wheel.

3,763,845

WALL SAW ASSEMBLY

James C. Hiestand, Redondo Beach, and Richard O. Thies, Studio City, both of Calif., assignors to Continental Drilling Company, Los Angeles, Calif.

Filed Feb. 22, 1972, Ser. No. 227,924
Int. Cl. B28d *1/04*
U.S. Cl. 125—14 **7 Claims**



A saw assembly for cutting walls and other flat concrete surfaces is disclosed. The saw assembly is removably mounted on a trolley which rides on a track structure attached to the flat surface by means of mounting brackets. The trolley contains wheels which support the saw on the track. Certain of the

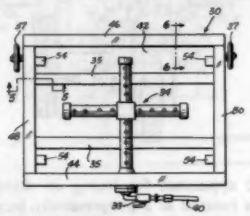
wheels are retractable for transversely mounting or removing the saw from the track. A continuous opening in the track allows the mounting brackets to be secured to the track at any point along the length thereof. Further, the mounting brackets are laterally adjustable after they are secured to the flat surface so as to provide a fine adjustment in alignment of the saw to the desired cut.

3,763,846

PORTABLE THREE-IN-ONE DEEP FAT FRYER, GRIDDLE AND BARBEQUE COMBINATION

John S. Schantz, Marine, Ill., assignor to Raymond G. Schantz and Socrates J. Schantz, both of Marine, Ill., part interest

Filed Apr. 10, 1972, Ser. No. 242,653
Int. Cl. F24c *3/14*
U.S. Cl. 126—41 R 5 Claims



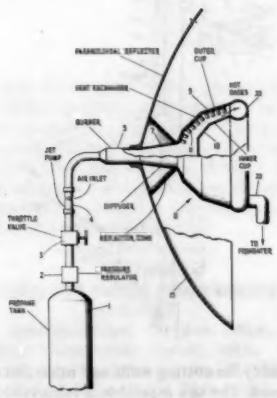
A portable gas stove supporting for separate use a deep fat fryer, griddle, and barbeque. The stove has an open top within which a gas burner is provided. The open top has a ledge supporting a deep fat fryer or a griddle or barbeque grate. The barbeque is provided with a shield to prevent drippings from meat to protect the burner and is provided with a special grate to receive synthetic and reuseable charcoal. The deep fat fryer has a vertical ledge at the top which receives an engaging portion of the griddle such that the griddle can be used as a lid on the fryer for storage. The same side of the griddle when turned right side up is used as a griddle and the flange engaging portion is employed to remove excess grease from the griddle.

3,763,847

RADIANT HEATER

Adi R. Guzdar, Sudbury, and Andrew C. Harvey, Waltham, both of Mass., assignors to Foster-Miller Associates, Waltham, Mass.

Filed Sept. 7, 1972, Ser. No. 286,940
Int. Cl. F23c *3/04*
U.S. Cl. 126—92 B 4 Claims



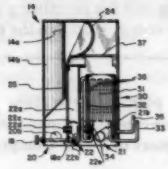
A radiant heater employs a jet pump to force a fuel-air mixture into a burner at high velocity. The hot gases generated in the burner are passed at high velocity into a heat exchanger having an elongate passage where heat is convectively extracted from the gases by fins disposed in the path of the gas flow. The extracted heat is transferred by conduction through the fins to a radiant energy emitter surface. The infrared radiation emanating from the emitter surface is directed by a parabolic reflector upon the area to be heated.

3,763,848

COMBINATION SPACE AND HOT WATER HEATER

Garold H. Williams, 43 W. 100 South, Smithfield, Utah

Filed Dec. 6, 1971, Ser. No. 205,015
Int. Cl. F24d *9/00*
U.S. Cl. 126—101 3 Claims



A portable space and water heater for use in camping, mobile trailers, pickup campers and the like, that provides space heating and rapidly heats quantities of water efficiently and safely. Heat is generated by burning bottled propane gas that is delivered, under pressure, through two heating systems each of which contains a simple burner assembly. Flame from one burner assembly is directed into and through metal radiating elements against which a fan means can be employed to disperse the radiated heat. The flame from the other burner assembly is directed into a surrounding water heating system through which water is circulated to be quickly heated. The burners may be used separately or operated together and a pilot light assembly links the two burner assemblies together to ignite either or both of them as desired. Heat from both the water and space heating systems flows from the unit through a common exhaust duct. A gas flow control valve assembly prevents gas flow to the water heater burner assembly when water is not present in, or flowing through, the surrounding water heating system, or when a maximum pressure level within the water heating system is exceeded. Water is pumped into the combination unit from a separate water source that is upstream from the water heater system and the temperature of the hot water generated is regulated by the rate at which water is pumped through the water jacket of the water heater system.

3,763,849

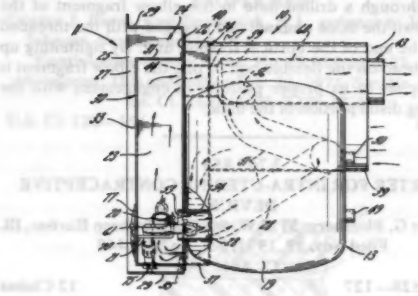
COMBINED SPACE HEATER AND WATER HEATER

Richard T. Pfluger, and John G. McGraw, both of Rockford, Ill., assignors to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Mar. 10, 1972, Ser. No. 233,605
Int. Cl. F24d *9/00*
U.S. Cl. 126—101 7 Claims

A space heater and a water heater are combined in a single heating unit with each heater including a combustion chamber

with a gas burner which is operable independently of the other gas burner. Together, the two burners control the flow of fresh



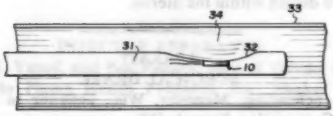
combustion air into the chambers and the flow of the hot gases of combustion through the heaters.

3,763,850

DEVICE FOR MEASURING THE PARTIAL PRESSURE OF A GAS IN A FLUID

Claude Gaudebout, Paris, and Jean-Fred Quercy, Saint-Cloud, both of France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 29, 1971, Ser. No. 213,775
Claims priority, application France, Dec. 31, 1970, 7047495
Int. Cl. A61b *5/05*
U.S. Cl. 128—2 E **6 Claims**



A device for measuring the partial pressure of a gas in a liquid or gaseous fluid, and more particularly, the partial pressure of oxygen in the blood comprising, a wafer having surface elements in a manner of a thin-layer integrated circuit defining a pair of electrodes and a reference electrode. The device is secured to a catheter tip by a casing whereby an electrolyte fluid is introduced between the casing and the measuring device.

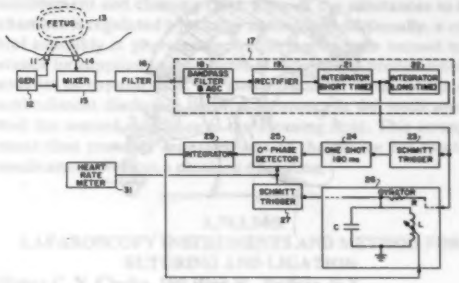
3,763,851

ULTRASONIC DOPPLER FETAL HEART MONITOR WITH VARIABLE RESONANCE MEANS

Richard Walter Haff, Willingboro, and Fred Louis Hatke, Skillman, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 8, 1971, Ser. No. 205,942
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 Z **11 Claims**

Ultrasonic apparatus for monitoring heartbeat activity from Doppler shifted information derived from heartbeat motion comprising deriving the Doppler shifted information, which is fed to an adjustable resonant circuit for de-emphasizing Doppler signal frequency content other than that about the resonant circuit frequency, and comparing input signals to and output signals from the resonant circuit for detecting a phase



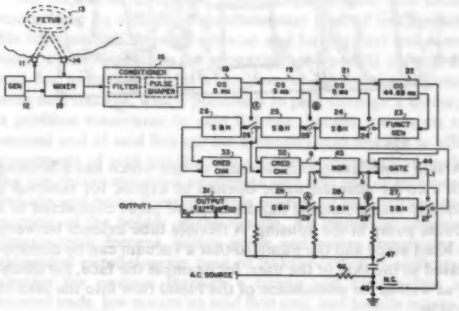
difference, if any, which is employed for adjusting the frequency of the resonant circuit at a preselected rate.

3,763,852

HEARTBEAT RATE MEASURING APPARATUS

Fred Louis Hatke, Skillman, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 8, 1971, Ser. No. 205,948
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 T **6 Claims**



Apparatus for determining the heartbeat rate of a patient comprising deriving electrical signals representative of heartbeat activity. The signals are converted by a function generator into a value indicative of heartbeat activity on a beat-to-beat basis, and, at least three successive ones of the values are compared by a pair of credence checkers having a preselected frequency tolerance. The values lying outside the tolerance are rejected. Passed values are averaged and displayed and a visible indication denotes occurrence of a nonpassed value.

3,763,853

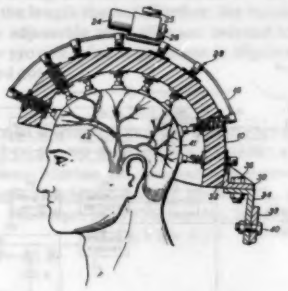
HEAD VIBRATOR

Stefan L. Jochimski, 2831 S. Union Ave., Chicago, Ill.

Filed Aug. 3, 1971, Ser. No. 168,684
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 **10 Claims**

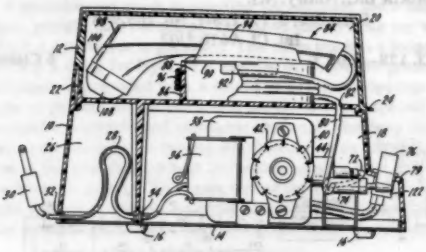
A head vibrator in which a plurality of massaging fingers are biased towards the skull of the user so that each finger accommodates to the variations in the skull configurations and

wherein the massaging fingers are interconnected by a network of vibration transmitting means so that vibrating means



connected to said network induces oscillatory movement of the massaging fingers.

3,763,854
SKIN STIMULATING AND CLEANING DEVICE
Medard W. Welch, 1111 Sheridan Rd., Winnetka, Ill.
Filed Jan. 21, 1971, Ser. No. 108,422
Int. Cl. A61h *1/00*
U.S. Cl. 128—40 **4 Claims**

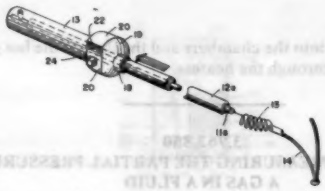


A skin stimulating and cleaning device which has a housing with a cover adapted to be opened to expose for removal a manually-manipulatable handle or hand piece connected to a vacuum pump in the housing. A flexible tube extends between the hand piece and the pump so that a vacuum can be communicated to the skin of the user, for example the face, for cleaning as well as for stimulation of the blood flow into the area of the skin.

3,763,855
DEVICE FOR FIXATION OF BONE FRACTURES
Richard M. McAtee, 355 South G St., Oxnard, Calif.
Filed Mar. 15, 1972, Ser. No. 234,849
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 BC **8 Claims**

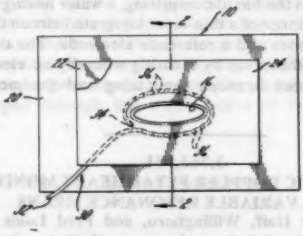
A medical assembly is provided for the positive fixation of fractures of the ulna, one of the forearm bones, in cases where it is broken at or near the elbow joint. One element of the assembly is secured to the distal (remote from the body) part of the ulna, and another threaded element is independently tightened up to impact the bone fragments. The first element may be a metal element or unit inserted from the side through the cortex, or hard outer part of the forearm bone, below the break. This metal element, referred to as the cortical fixation unit, extends into the soft center channel of the bone and has a transverse threaded hole near its end, opening to the center channel of the bone. The other element may be a flexible bolt or pin formed of a threaded stiff wire about six inches long having a bolt head at one end, and will be referred to as a "-pin" in the present specification. This flexible bolt or pin is pushed through a drilled hole in the elbow fragment of the bone, down the bone channel and engaged with the threaded hole at the end of the cortical fixation unit. By tightening up the bolt head on the flexible bolt or pin, the elbow fragment is positively set in its proper position in engagement with the remaining distal portion of the ulna.

3,763,856
INSERTER FOR INTRA-UTERINE CONTRACEPTIVE DEVICE
Theodore G. Blomberg, 3715 W. 9th St., Winthrop Harbor, Ill.
Filed Nov. 19, 1971, Ser. No. 200,449
Int. Cl. A61f *5/46*
U.S. Cl. 128—127 **12 Claims**



An inserter for an intra-uterine contraceptive device (IUD) in which a bendable rod is fixed at one end to a handle and is normally sheathed by an outer protective tube which projects beyond the rod's opposite end. A locking member projects from the handle and may be positioned to lock the tube against sliding movement upon the rod during insertion of the IUD. Thereafter, upon insertion of the IUD, the lock is released and the outer tube is retracted to deposit the contraceptive device within the uterus.

3,763,857
SURGICAL DRAPE
Mark S. Schrading, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 24, 1972, Ser. No. 246,896
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **9 Claims**



An improved disposable surgical drape of the type that includes a primary operative area and the fenestrations therein, comprising a fibrous base sheet, a fluid impervious plastic film covering said primary operative area, and an open celled fluid absorbent foam material overlying the plastic film, the improvement comprising means for communicating an external source of reduced air pressure, the reduced air pressure being effective to provide a suction force for removing fluid absorbed in the foam material, the communicating means being

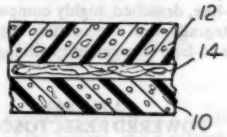
located intermediate the film and foam material at least near the fenestration.

3,763,858

COMPOSITE MATERIAL HAVING CEMENTITIOUS PROPERTIES

George J. Buese, East Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 39,816, May 22, 1970, abandoned. This application Feb. 24, 1971, Ser. No. 118,462
Int. Cl. A61l *15/00*; B32b *27/40*
U.S. Cl. 128—156 10 Claims



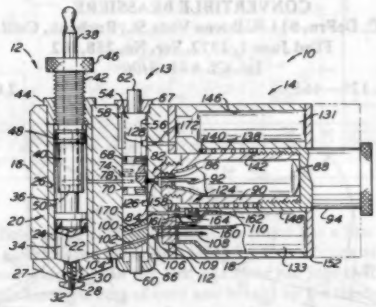
A composite material, useful as a surgical, medical or orthopedic wrapping, is provided which will adhere or cohere to another surface or to itself by the application of moderate pressure either at room temperature or at an elevated temperature and will be substantially non-tacky to the touch until the application of such moderate pressure. The composite material comprises a cementitious core having bonded thereto a flexible, open cellular, resilient polymeric protective covering, the core having sufficient softness at the conditions of use to extend through the cells of the protective covering and become available at the outer surface thereof upon application of moderate pressure.

3,763,859

INJECTOR APPARATUS

Howard M. Yanof, and Ben Pansky, both of Toledo, Ohio, assignors to Pigmy Health Products, Inc., Shaker Heights, Ohio

Filed Nov. 11, 1971, Ser. No. 197,661
Int. Cl. A61m *5/30*
U.S. Cl. 128—173 H 13 Claims



The specification and drawings disclose an apparatus for dispensing or injecting substances such as medicaments. The disclosed apparatus includes a dispensing chamber associated with a source of pressurized fluid which can serve to expel substances from the chamber. A movable housing or the like is provided for containing first and second different substances which, in the case of medicament injection, are preferably medicament and cleaning fluid. Flow of the substances to the chamber is regulated by a valve assembly. Additionally, a control assembly is provided for requiring that the second substance be supplied to the chamber following a predetermined number of expulsions of the first substance. In the particular embodiment disclosed, the first substance is the medicament and the second substance is the cleaning fluid. This arrangement thus prevents repeated uses of the device for ejecting medicament without a cleaning operation.

3,763,860

LAPAROSCOPY INSTRUMENTS AND METHOD FOR SUTURING AND LIGATION

Henry C. N. Clarke, 100 High St., Buffalo, N.Y.

Filed Aug. 26, 1971, Ser. No. 175,163
Int. Cl. A61b *17/06*, *17/04*
U.S. Cl. 128—334 4 Claims

An improved combined laparoscopic needle and forceps comprising an elongated parallelogram type of linkage suitable for insertion through a trocar and having first and second ends, a needle, means for mounting said needle on said first end for movement from a position in substantial alignment with said linkage, which permits it to pass through a trocar, to a position transverse to said linkage, handle means on said second end of said linkage for actuating said linkage to effect movement of said needle, and a forceps construction including jaw means mounted proximate said first end of said needle linkage and being formed from a portion of said linkage and a portion of the holder of the needle. An improved combined laparoscopic forceps, suture guide and cutter comprising an elongated parallelogram type of linkage which is sufficiently slender for passage through a trocar and having first and second ends, jaw means on said first end, and handle means on said second end for actuating said linkage to move said jaws, groove means associated with said jaws for receiving a suture to thus act as a suture guide, and cutter means mounted on said jaws for cutting a suture. An improved laparoscopic ligator comprising an elongated stem having first and second ends, a handle at said first end and suture guiding means at said second end, said suture guiding means being of substantially the same cross sectional dimension as said elongated stem for guiding a suture through a trocar. An improved method of performing a surgical operation by laparoscopy comprising the steps of inserting at least first and second trocars through the body of a patient at spaced locations, inserting a first instrument comprising the above described combined laparoscopic needle and forceps through said first trocar, inserting a second instrument comprising the above described laparoscopic forceps, suture guide and cutter through said second trocar, manipulating said first and second instruments in cooperating relationship with each other in a predetermined area to bring the central portion of a suture in position, withdrawing one of said instruments to bring the end of the suture outside of the patient's body, tying a knot in the suture outside of the body, and bringing the knot into the desired position by means of said laparoscopic ligator.

3,763,861

CONTRACEPTIVE MEANS

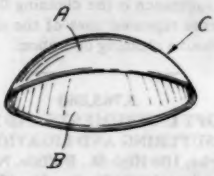
Emilio Forti, Rome; Carlo Del Guercio, Pisa, and Giovanni Gazzani, Como, all of Italy

Continuation-in-part of Ser. No. 878,232, Nov. 19, 1969, abandoned. This application Apr. 19, 1972, Ser. No. 245,516

Claims priority, application Italy, Dec. 16, 1968, 25160 A/68

Int. Cl. A61f *15/00*

U.S. Cl. 128—271 2 Claims



A cap device is coated externally and internally with a vaginal mucous membrane antiseptic and is formed of a water-soluble starch.

3,763,862

ARRANGEMENT AT A SUCTION INSTALLATION FOR MEDICINAL HYGIENIC AND COSMETIC PURPOSES

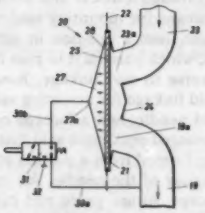
Manfred Spieth, Baden-Wurrtemberg, Germany, assignor to Durr-Dental KG, Baden-Wurrtemberg, Germany

Filed Feb. 8, 1971, Ser. No. 113,589

Claims priority, application Germany, Feb. 6, 1970, P 20 05 567.8

Int. Cl. A61m *1/00*

U.S. Cl. 128—276 33 Claims



A control arrangement in a suction system for medicine, hygienic or cosmetic purposes, in which a suction hose leading to a suction nozzle is adapted to be connected with a suction line leading to a suction unit producing a vacuum by way of a valve that includes a substantially vertically arranged valve diaphragm actuated with the aid of the vacuum prevailing in the suction line by way of a connecting line that includes a control valve having three connections and two positions; the valve is adapted to be controlled by the user and selectively establishes a communication between a valve control space and the suction line or atmosphere.

3,763,863

DISPOSABLE DIAPER

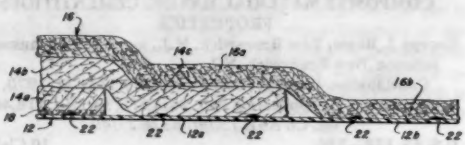
Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 7, 1971, Ser. No. 187,248

Int. Cl. A61f *13/16*

U.S. Cl. 128—287 12 Claims

A disposable multi-layer diaper including at one side a porous fibrous facing layer to be brought into contact with an infant's skin, and including at the other side a water-impervious backing sheet, with a multi-layer batt being interposed between the facing layer and backing sheet. The batt layers are of different size, with the smaller layer being positioned in face-to-face engagement with the backing sheet, and with the larger layer having lateral extremities which extend beyond



the smaller layer on each side thereof. The smaller batt layer and the lateral extremities of the larger layer are each adhered to the backing sheet. In a preferred embodiment of the invention, a paper-like, densified, highly compacted cellulosic layer is formed integrally with the smaller batt layer, and is positioned in face-to-face engagement with the backing sheet.

3,763,864

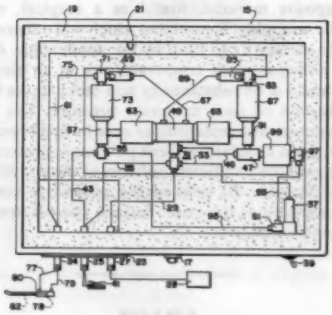
POWERED RESECTOSCOPE

George H. Dremann, 1940 Hopkins St., Berkeley, Calif.

Filed Oct. 29, 1971, Ser. No. 193,658

Int. Cl. A61b *17/32*

U.S. Cl. 128—305 10 Claims



A cold-punch resectoscope is provided with a hydraulic actuator for automatically reciprocating the blade of the resectoscope within its sheath. A source of fluid pressure is connected to the hydraulic actuator and provided with a control means. A hydraulic circuit is connected between the control means and the hydraulic actuator for selective operation thereof.

3,763,865

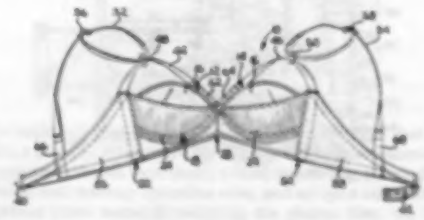
CONVERTIBLE BRASSIERE

Albert C. DeFru, 811 N. Buena Vista St., Burbank, Calif.

Filed June 1, 1972, Ser. No. 258,502

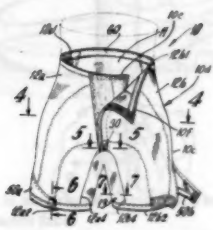
Int. Cl. A41c *3/00*

U.S. Cl. 128—465 2 Claims



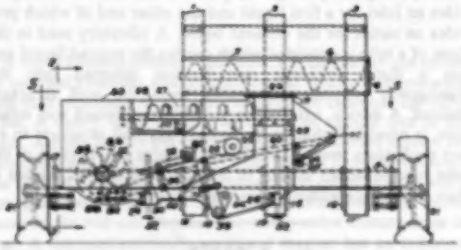
A brassiere in which the upper cup portion and cradle straps may be moved beneath the breast to result in exposing the nipple, therefore creating a "no bra" appearance.

3,763,866
ADJUSTABLE SUPPORT GARMENT
Myron Bienenfeld, Lawrence, N.Y., assignor to Magic Mold, Inc., Freeport, N.Y.
Filed July 5, 1972, Ser. No. 269,262
Int. Cl. A41c 1/00
U.S. Cl. 128—558 18 Claims



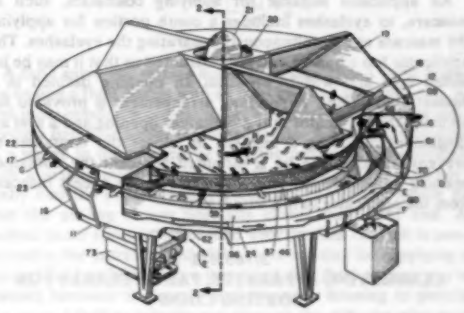
A body support garment comprising a continuous portion encircling the hips of the wearer, and a portion encircling the waist of the wearer and extending to an upper edge of the garment, said garment being split down from said upper edge toward said hip encircling portion to form overlapping flaps on opposite sides of the split. Means is provided to releasably attach together the overlapping flaps in various angular positions. Members attached to the flaps adjacent the end of the split remote from the upper edge, are pivoted to each other to facilitate adjustment of the flaps and whereby the dimension of the hip encircling portion may be maintained while adjusting the waistline dimension of the garment to accommodate the wearer whose waistline may vary considerably at times without proportional variation in hipline dimension. The garment is preferably made of material which stretches circumferentially, The garment may also have leg portions which are split and have overlapping adjustable flaps. The invention may be embodied in a woman's girdle or a man's brief.

3,763,867
CORN SHELLER AND SEPARATOR
Robert A. Stelzer, Coldwater, and Lyman J. Gunyou, Cellina, both of Ohio, assignors to Avco Corporation, Coldwater, Ohio
Filed Sept. 7, 1972, Ser. No. 286,962
Int. Cl. A01f 11/06
U.S. Cl. 130—6 10 Claims



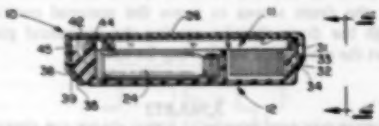
A field-going corn sheller and separator has a first chamber with a perforated lower half receiving ears of corn at one end. A rotor journaled in the first chamber has lugs that shell the kernels from the ears of corn and breaks up the trash. The kernels pass through the perforations. A second chamber alongside the first perforated chamber and also having a perforated lower half receives material from the first chamber, including trash from the stalks and ears and any remaining kernels. A paddle assembly, driven at the same rate as the rotor, substantially agitates the trash and remaining kernels in the second chamber to cause the kernels to pass outward through the perforations therein while at the same time passing the trash to the outlet end of the second chamber.

3,763,868
TABLE THRESHER
Amir U. Khan, Okemos, Mich., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed July 14, 1971, Ser. No. 162,571
Claims priority, application Philippines, Jan. 14, 1973, 11646
Int. Cl. A01f 7/02
U.S. Cl. 130—27 M 6 Claims



A threshing machine of the rotary table-type has a horizontally split housing defining an annular opening. Within the housing is a horizontally disposed, rotary threshing table with a plurality of outwardly inclined threshing blades secured on its upper surface, and several radial fan blades on the lower surface. Disposed concentrically with the rotary threshing table, adjacent its periphery, is a rotary annular perforated surface which rotates at a slower rate than the rotary threshing table and over which the threshed materials pass as the latter are thrown off the rotary threshing table. Above the rotary annular perforated surface, and adapted to cooperate therewith, is an annular member, on the bottom side of which are several uniformly spaced apart spiral plates.

3,763,869
PORTABLE TOOTHBRUSH
Fred E. Sanders, 503 E. 108th St., Cleveland, Ohio
Filed Oct. 21, 1971, Ser. No. 191,506
Int. Cl. A45d 44/18
U.S. Cl. 132—84 B 4 Claims



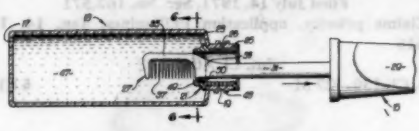
An article of manufacture consisting of a toothbrush hinged in a plastic storage container, the latter serving also as a part of the handle. Brush and paste compartments are provided in the container and a sealing lid serves in the open position as a hanger for drying purposes.

3,763,870

APPARATUS AND METHOD FOR APPLYING COSMETICS

Robin M. Montgomery, Sherman Oaks, and Gordon E. Messner, Los Angeles, both of Calif., assignors to Max Factor & Co., Hollywood, Calif.

Filed Aug. 2, 1971, Ser. No. 167,979
Int. Cl. A45d *44/18*
U.S. Cl. 132—85 **4 Claims**



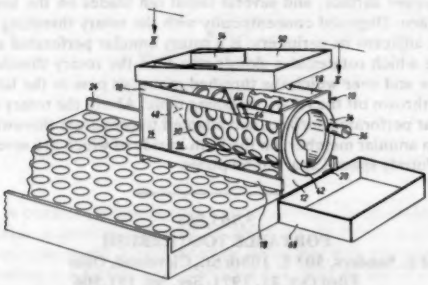
An applicator suitable for applying cosmetics, such as mascara, to eyelashes includes a comb portion for applying the mascara and simultaneously separating the eyelashes. The applicator has a handle and is constructed so that it may be inserted into and withdrawn from an opening defined in a cosmetic container. A coupling arrangement is provided for securing the applicator in the container opening and a seal arrangement including a resilient lip closes the container to prevent leakage. The lip is mounted adjacent the container opening and functions as a wiper to remove excess mascara from the applicator as it is withdrawn.

3,763,871

CLASSIFYING APPARATUS, PARTICULARLY FOR SORTING COINS

Ludwig Jobst, Hammannstrasse 26, Munich, Germany

Filed July 20, 1971, Ser. No. 164,297
Claims priority, application Germany, July 29, 1970, P 20 37 709.7
Int. Cl. G07d *3/08*
U.S. Cl. 133—3 R **16 Claims**



A drum rotatable about a horizontal axis comprises holes in its peripheral wall, the size of the holes depending on the critical diameter according to which the coins or the respective other materials are to be sorted. A conveyor screw disposed inside the drum serves to move the material continuously through the drum thereby causing the individual pieces to contact the peripheral wall having the holes.

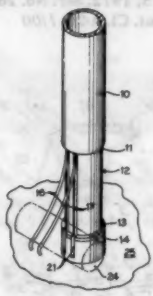
3,763,872

PICKUP DEVICE FOR WALKING CANE OR CRUTCH

Clarence A. Gooley, Harrington, Wash.

Filed Feb. 28, 1972, Ser. No. 229,656
Int. Cl. A45b *3/00, 9/04*
U.S. Cl. 135—47 **6 Claims**

A pickup device for use at the lower end of a walking cane or crutch. The lower end of the cane or crutch is formed as a hollow tubular member that slidably receives a complementary telescoping post. The lower end of the post serves as a frictional tip for the cane or crutch. The post has a gripper in the form of one or more fingers extending longitudinally alongside it which move longitudinally with the post and are received within the tubular end of the cane or crutch when the post is recessed. The gripper is spring biased to permit it to protrude radially outward from the post when the post is extended.

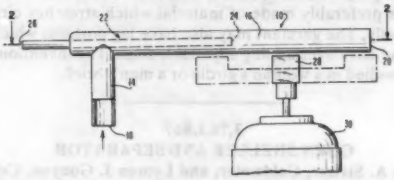


3,763,873

METHOD AND APPARATUS FOR MIXING LIQUIDS

Alexander M. Saunders, Bedford Village, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,496
Int. Cl. F16k *19/00*
U.S. Cl. 137—1 **10 Claims**



A method and apparatus for intermixing a first liquid and a second liquid for use in automated apparatus of the continuous-flow type for the quantitative wet-chemical analysis of a treated substance. The apparatus includes a body defining a walled, elongated passageway portion, one end of which provides an inlet for a first liquid and the other end of which provides an outlet for the effluent liquid. A vibratory reed in the form of a tube is provided which carries the second liquid and has a distal discharge end portion directed into the passageway portion and spaced from the wall structure thereof. A device, external to the aforementioned wall structure, is provided which acts through this wall structure to effect a vibratory movement of the discharge end portion of the tube reed to effect mixing of the first and second liquids at their confluence within the passageway portion.

3,763,874

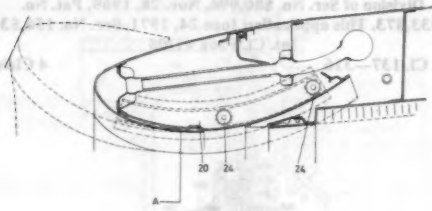
AIR INTAKE FOR A GAS TURBINE ENGINE

Geoffrey Light Wilde, Turnditch, and Leonard John Rodgers, Spondon, both of England, assignors to Rolls-Royce (1911) Limited, London, England

Filed Dec. 4, 1972, Ser. No. 311,958
Claims priority, application Great Britain, Dec. 4, 1971, 56,394/71
Int. Cl. F02c *7/04*
U.S. Cl. 137—15.1 **4 Claims**

The air intake lip of a gas turbine engine is made movable so as to make possible an increase in its contraction ratio. The

movement is achieved in a manner which maintains the air intake throat area and position substantially constant, thus

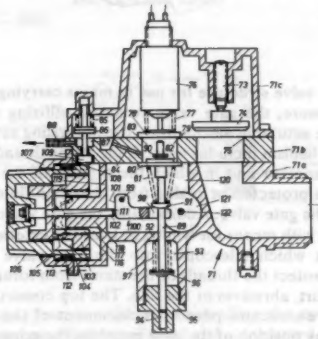


avoiding changes in air flow characteristics between the throat plane and compressor face.

3,763,875
GAS CONTROL SYSTEM WITH THERMOELECTRIC IGNITION SAFETY DEVICE

Gunter Mobus, Wermelskirchen, and Ernst Sohnchen, Huckeswagen, both of Germany, assignors to Joh. Vaillant KG, Remscheid, Germany

Filed Apr. 29, 1971, Ser. No. 138,579
Claims priority, application Austria, May 25, 1970, A4675
Int. Cl. F23n *5/10*; F16k *31/524*
U.S. Cl. 137—66 **12 Claims**

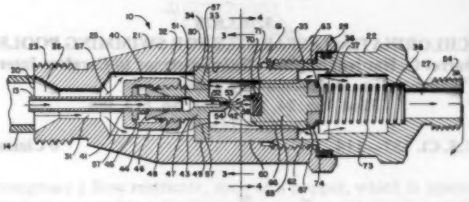


A valve housing defines a gas inlet, a main burner gas outlet, an internal chamber and an ignition gas duct communicating with said chamber. At opposite sides of the chamber are valve seats. A safety valve closure is positioned against one of the seats. A main burner gas valve closure is positioned against the other seat and is movable away from its seat in the direction of gas flow. A valve rod extends through the latter closure and is movable therein, with the construction being such that movement of the rod can displace the safety valve closure from its seat. A thermoelectrically energized magnet has an armature operatively connected to the safety valve closure to hold it off its seat so long as the magnet is energized. A manually pivotable handle on the housing is in juxtaposition to a thrust member which is restrained against rotation while movable axially of the handle. Cams on the handle bear against cam tracks on the thrust member to axially position the thrust member in response to the rotational position of the handle. The axial position of the thrust member determines the position of the valve rod. An ignition gas valve is positioned in the ignition gas duct. It has a valve stem which bears against a cam on the handle to open and close the ignition gas valve as determined by the rotational position of the handle.

3,763,876
FLUID VALVE AND MIXING ASSEMBLY

Craig Freeman, Van Nuys, and Robert D. Hetherington, Sunland, both of Calif., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Mar. 21, 1972, Ser. No. 236,740
Int. Cl. F16k *19/00*
U.S. Cl. 137—114 **9 Claims**

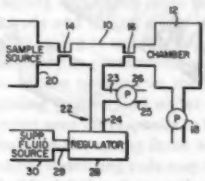


A fluid valve and mixing assembly comprising a valve housing having a fluid nozzle with an inlet end and an outlet end. A first inner conduit is connected to the nozzle inlet end for supplying a first fluid under pressure thereto. A piston is mounted in a sleeve in the housing beyond the nozzle and is provided with a sealing means at one end thereof. Spring means normally bias the piston against the outlet end of the nozzle so that the sealing means normally closes the outlet end. A second outer conduit concentric with the first conduit is connected to the entrance end of the valve housing for supplying a second fluid under pressure thereto. A first fluid passageway is formed between the nozzle and the valve housing to permit the second fluid to initially pass through the valve housing past the nozzle. A second fluid passage is provided around the outside of the piston which is normally closed but which is opened when the piston moves away from the nozzle with the flow of the second fluid. The movement of the piston away opens the nozzle outlet and permits the first fluid to exit from the nozzle and mix with the second fluid whereby the mixture of the fluids then passes through the second passageway to be discharged through the exit end of the valve housing. The first fluid passing through the nozzle has a greater fluid pressure than that of the second fluid passing around the nozzle so that the first fluid upon leaving the nozzle outlet end flows outwardly in the valve housing to mix with the second fluid passing around the outside of the nozzle to facilitate mixing the two fluids. When the flow of the second fluid is cut off, the spring loaded piston returns to its closed position forcing the seal means against the outlet end of the nozzle to cause all fluid flow to cease.

3,763,877
FLUID FLOW CONTROL SYSTEM

David P. Lieb, Lexington, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Nov. 12, 1971, Ser. No. 198,297
Int. Cl. G05d *7/01*
U.S. Cl. 137—117 **8 Claims**



An instrument having a fluid sample treating chamber incorporating a flow control system which maintains a constant fluid sample flow to the treating chamber. The fluid sample is

drawn to the chamber along a passage having two flow restricting devices in series. A bypass line has an inlet connected between the flow restrictive devices and another inlet in communication with a supplemental fluid supply. Regulating means in the bypass line governs the amount of supplemental fluid pumped through the bypass line, to thereby influence the fluid sample pressure between the flow restrictive devices and the flow of the fluid sample to the chamber.

3,763,878

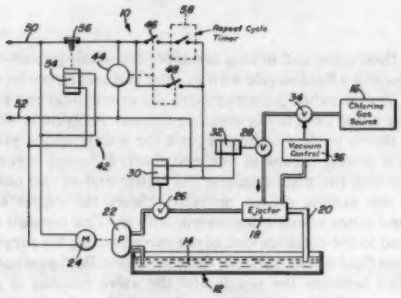
CHLORINATING APPARATUS FOR SWIMMING POOLS

Darrel G. Harden, Norman, Okla., assignor to Carefree International, Inc., Oklahoma City, Okla.

Filed Aug. 24, 1971, Ser. No. 174,388

Int. Cl. F16k *19/00*

U.S. Cl. 137—114 **6 Claims**



Chlorine gas is controllably introduced into the water of a swimming pool by circulation of the water through an ejector to which the gas is fed. A clock-controlled circuit is operative simultaneously with a motor driven pump circulating the water, to control opening and closing of valves through which the water and gas is conducted to the ejector in accordance with a selected operational mode.

3,763,879

COMBINATION COLUMN

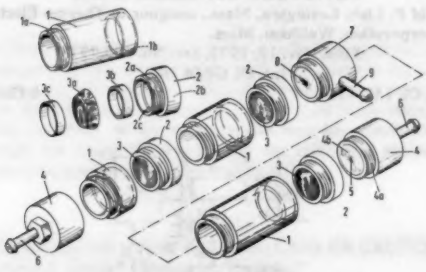
Dieter Jaworek, Tutzing, Upper Bavaria, Germany, assignor to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Feb. 18, 1971, Ser. No. 116,581

Claims priority, application Germany, Feb. 23, 1970, P 20 08 354.9

Int. Cl. B01d *35/28*

U.S. Cl. 137—268 **3 Claims**



Combination columns comprised of individual connective parts, some of which may contain sieve means and other means, provide flexible and adaptive systems for effecting chemical processes such as column chromatography and involving carrier-bound reagents.

3,763,880

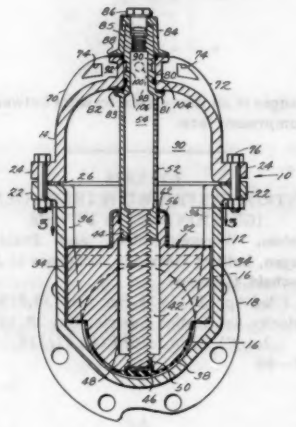
GATE VALVE STRUCTURE

Wilbur R. Leopold, Jr.; John J. Smith; Frank C. Hackman; Lawrence F. Luckenbill, and Joseph L. Daghe, all of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Division of Ser. No. 880,996, Nov. 28, 1969, Pat. No. 3,633,873. This application June 24, 1971, Ser. No. 156,531

Int. Cl. F16k *41/06*

U.S. Cl. 137—316 **4 Claims**



A gate valve structure for use in mains carrying fluid under high pressure, the gate valve structure utilizing a non-rising stem type actuating mechanism. The non-rising actuating stem type mechanism includes telescoping stems threadedly engaging one another and in which the threads of the telescoping stems are protected or sealed from the main fluid at all positions of the gate valve. Additionally, the gate valve structure is provided with means for wiping at least the exterior surface of one stem which telescopes into the gate valve member to further protect the threads of the stems from foreign material, such as dirt, abrasives or the like. The top construction of the gate valve structure permits replacement of the upper stem seal in any position of the gate member, the construction also providing for a positive control of the positioning of the upper valve stem irregardless of normal manufacturing tolerances. Compensating spacer means insures a load being placed on the upper stem seal.

3,763,881

LIQUID LEVEL CONTROL DEVICES

Hugh Gwynfryn Jones, 87 Holywell Dr., Loughborough, Leicestershire, England

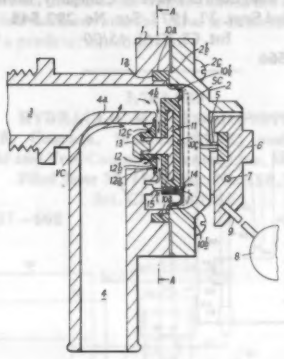
Filed Aug. 25, 1971, Ser. No. 174,792

Int. Cl. E03d *1/32*; F16k *31/18*

U.S. Cl. 137—414 **4 Claims**

A device for controlling a flow of liquid from a liquid pressure source comprising a main valve which is actuated by application of the liquid pressure of the source under the control of a pilot valve, in the case of a float controlled valve for a reservoir the pilot valve is actuated directly by a float in the reservoir; the construction reduces to a minimum the dimensions of float required and provides accurate control of the liquid level in the reservoir. The device also includes a flow restrictor which is mounted on a control member of the main valve, the latter being supported by an annular diaphragm

which is moved by the applied liquid pressure to close the outlet of the main valve, and is arranged to restrict the liquid flow



as the control member approaches the closed position; this prevents concussive shock in the flow of liquid.

3,763,882

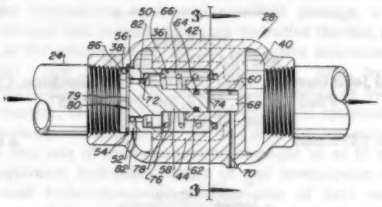
MINIMUM PRESSURE VALVE FOR LIQUID INJECTED GAS COMPRESSOR

John C. Shoop, and Robert R. Anderson, both of Quincy, Ill., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Apr. 14, 1972, Ser. No. 244,186

Int. Cl. F16k *15/00*

U.S. Cl. 137—494 **5 Claims**



A minimum pressure valve for controlling the pressure in the compressed gas discharge line of a liquid injected gas compressor downstream of the compressor liquid separator element. The minimum pressure valve includes a closure member which is biased to the closed position by a coil spring and which includes opposed pressure surfaces which are acted on by fluid at the pressure upstream of the valve, and a pressure surface which is acted on by fluid at atmospheric pressure. The combined spring and pressure forces provide for improved valve operating characteristics to maintain a desired minimum pressure upstream of the valve and negligible pressure losses through the valve at compressor operating conditions greater than the desired minimum pressure.

3,763,883

PRESSURE-RESPONSIVE DEVICES HAVING CONTROLLED RESPONSE TO FLOW SURGES

David B. Pall, Roslyn, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

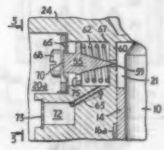
Division of Ser. No. 622,586, March 13, 1967, Pat. No. 3,495,566. This application Feb. 16, 1970, Ser. No. 14,843

Int. Cl. F16k *31/12*

U.S. Cl. 137—501 **5 Claims**

A fluid differential pressure-responsive device, such as a differential pressure indicator, is provided which incorporates a flow restrictor in the line of flow to the indicating mechanism. This flow restrictor is movable in response to a flow surge to constrict the line and limit flow to the indicating mechanism to inhibit response of the indicator to a flow surge.

A flow restricting device for incorporation into a line leading to pressure-responsive device, such as a differential pressure indicator, is also provided. The flow restricting device



comprises a flow restrictor, such as a poppet, which is operatively connected to a diaphragm, and is associated with a small flow control passage. The poppet is mounted for movement in response to a pressure differential across the diaphragm caused by a flow surge to the flow control passage to constrict the line to the indicator thereby limiting flow therethrough.

3,763,884

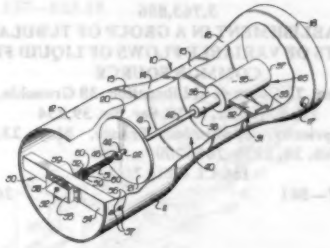
CONSTANT VOLUME FLOW DEVICE

Ralph A. Grassi, 2905 Via San Jacinto, and Louis J. Leembuis, 309 E. Cordoba, both of San Clemente, Calif.

Filed Feb. 14, 1972, Ser. No. 225,809

Int. Cl. F16k *31/12, 31/36*

U.S. Cl. 137—504 **5 Claims**



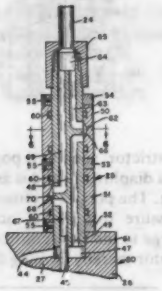
The device has a body defining a passage with an inlet portion, a smaller outlet portion, and a specially shaped progressively decreasing portion therebetween; has a restricting plate of generally the same transverse configuration as the passage but with smaller dimensions so as to provide open flow area between the plate and the body for fluid flow; has a rod attached to the plate and slidably mounted to a piston slidably positioned in a cylinder on a support member for axially mounting the plate in the progressively decreasing portion of the passage for movement therealong by the fluid flowing against the plate and through the open flow area; and has a spring extending from the plate upstream to be anchored to a rod secured to an axially adjustable cross member extending through slots in the body and having a gear wheel with fingers for threading along the spring to suitably adjust the spring rate of the spring and position the cross member relative the body to locate the plate at the position in the specially shaped progressively decreasing portion and under a suitable spring force whereby the open area corresponds to the fluid pressure force required to balance the spring force to give a constant flow of fluid. If need be, stabilizing rods may be provided from the support member through the plate to the cross member for preventing rotation of the plate relative the body. The special shape of the progressively decreasing portion is given by formulas for different types of springs and for different geometric shapes of passages and plates.

3,763,885

CONTROL VALVE

Ernst Sussman, 634 Stefko Blvd., Bethlehem, Pa.

Division of Ser. No. 151,065, June 8, 1971, Pat. No. 3,726,363.
This application Sept. 22, 1972, Ser. No. 291,382
Int. Cl. F16k *19/00*
U.S. Cl. 137—556.6 **1 Claim**



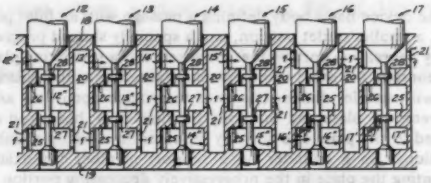
A coolant spider assembly that serves to selectively feed coolant to the spindles of a turret type drilling machine, and wherein there is provided a valve means for controlling the flow of coolant, and wherein there is also provided a sealing arrangement for the spider assembly.

3,763,886

ESTABLISHMENT IN A GROUP OF TUBULAR ELEMENTS OF VARIABLE FLOWS OF LIQUID FROM A COMMON SOURCE

Paul Lambert, 72 Cours de al Liberation, 38 Grenoble, France

Filed May 21, 1970, Ser. No. 39,234
Claims priority, application France, May 23, 1969, 6916007; Feb. 20, 1970, 7006260
Int. Cl. G21c *7/32*
U.S. Cl. 137—561 **26 Claims**



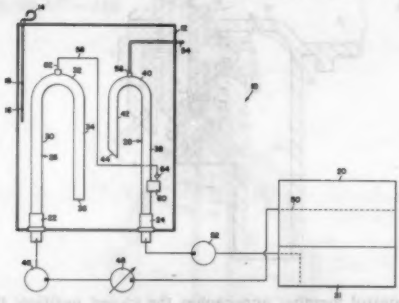
In a chemical installation having a group of tubular elements through which fluid from a common source circulates in varied flows in accordance with a given pattern, all of the tubular elements are mounted on identical feet that are each enclosed in a housing which is provided with a liquid inlet opening through which the liquid from the common source flows to the bottom entry end of the associated tubular element. Provided between the entry end of each tubular element and its associated liquid inlet opening is at least one annular constriction through which the liquid passes in its flow to such entry end. The different flows of liquid in the group of tubular elements are established by varying the number of the constrictions and/or their cross-sections, and/or the locations of the liquid inlet openings.

3,763,887

FIXED LEVEL, ANTI-SYPHON HYDRAULIC SUMP TANK

Gary Leo MacVey, and Charles William Hilgert, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sept. 27, 1972, Ser. No. 292,548
Int. Cl. F16k *45/00*
U.S. Cl. 137—566 **12 Claims**



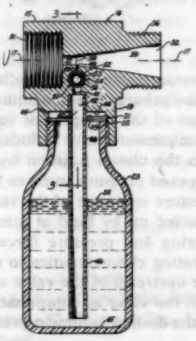
A hydraulic system for cirulating lubricating fluid through a transmission includes a hydraulic sump tank having a normal fluid level located above the transmission. Connected to the sump tank and the transmission is delivery pump means for pumping fluid to the transmission; and also connected to the transmission and sump is a scavenge pump for pumping fluid from the transmission back to the sump tank. The delivery and scavenge pumps are connected to the sump is such a way as to prevent any substantial amount of fluid from draining through the pumps to the transmission when the pumps are not operating.

3,763,888

ASPIRATING VALVE

Willard John Duecker, 1041 Cameron Way, Stockton, Calif.

Filed Apr. 26, 1972, Ser. No. 247,557
Int. Cl. F16k *19/00*
U.S. Cl. 137—604 **6 Claims**



A valve body with a water passageway having a Venturi portion is interposed in a water line, adjacent a shower head, for example. Fluids, such as shampoos, liquid soaps, detergents, bath oils, and the like, are introduced into the water stream at the Venturi throat, a fluid flow channel in the valve body extending to the throat from a fluid supply reservoir removably connected to the valve body. Interposed in the fluid flow path is a hollow actuator rod translatable in a cross bore formed in the valve body. In "ON" position, an annular groove in the rod periphery is in register with the adjacent channel ports to permit fluid to flow from the reservoir into the water stream. In "OFF" position, an annular slot in the rod periphery is in re-

gister with the adjacent channel ports, the suction being broken, however, by openings connecting the annular slot with a central hollow bore in the actuator rod open to the atmosphere. For institutional applications, the duration of the "ON" period is timed, and the valve is automatically closed at the end of a predetermined period.

3,763,889

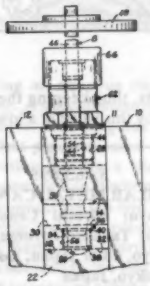
HYDRAULIC MANIFOLD SYSTEM

Richard B. Courson, Warren, Mich., assignor to Almo Manifold and Tool Company, Center Line, Mich.

Filed June 30, 1971, Ser. No. 158,391

Int. Cl. F17d *1/00*

U.S. Cl. 137—608 **6 Claims**



Improvement in a hydraulic manifold system having a hydraulic manifold having a hydraulic circuit therein providing hydraulic service external to said manifold, said circuit including a pair of manifold passages, a set of interconnecting passages intersecting each said manifold passage, a set of valves in each said manifold passage operative therein, respectively, at the intersections with the respective interconnecting passages, said improvement comprising said hydraulic manifold having means for mounting a plurality of hydraulic units thereon, two service ports for each said hydraulic unit, said service ports arranged in two sets intersecting, respectively, the two sets of interconnecting passages so as to provide both upstream hydraulic service to and downstream service from said hydraulic units wherein one of said manifold passages and the respective set of service ports therefor pass upstream flow of hydraulic liquid to said hydraulic units while the other manifold passage and the respective set of service ports therefor pass downstream flow of hydraulic liquid from said hydraulic units, whereby either or both of the upstream and downstream flows to any of said hydraulic units can be controlled without interfering with the respective flows to or from the other hydraulic units.

3,763,890

FLOW-CONTROL VALVE

Karl Jean Wolf, Mannheim, Germany, assignor to Weinheimer Gummiwerke G.m.b.H., Weinheim, Germany

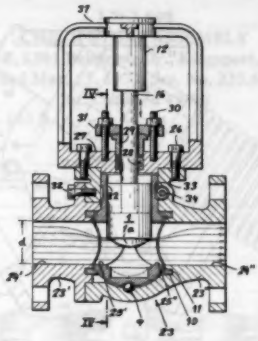
Filed Dec. 20, 1971, Ser. No. 209,708

Claims priority, application Germany, Apr. 21, 1971, P 21 19 357.7

Int. Cl. F16k *3/12*

U.S. Cl. 137—614.17 **10 Claims**

A valve for controlling the flow of a fluid has a housing with coaxial inlet and outlet ports on opposite sides of a transverse cylindrical chamber. A plunger axially movable in this cylinder has a cylindrical body terminating at its free end in a generally saddle-shaped formation with two convex ridges flanking the flow path, these ridges being separated by a depression of arcuate or trapezoidal profile bottoming substantially tangentially to the ports in a closure position in which the ridges enter a recess at the closed end of the housing. The cylindrical chamber and the recess may be formed in a partspherical insert which is rotatable within the housing



about the cylinder axis to block the fluid flow while permitting withdrawal of the plunger for replacement or repair.

3,763,891

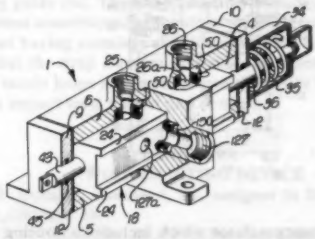
CONTROL VALVE

Marshall A. Stiltner, 2700 Peterson Way, Apt. 28B, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 129,153, March 29, 1971, abandoned, which is a continuation of Ser. No. 852,826, Aug. 25, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,447

Int. Cl. F16k *11/06*

U.S. Cl. 137—625.18 **33 Claims**



A control valve in which a slide is reciprocable in a body and tubular sealing elements have end faces slidably engaging an opposed face, the flow path being through the sealing elements and through the slide. Forces applied to the slide by fluid pressure and by the sealing elements are taken by support bearings which prevent the slide from cocking into engagement with the body.

3,763,892

VALVES

John Alfred Lipscombe, Ashford, England, assignor to Walton Engineering Company Limited, London, England

Filed Apr. 3, 1972, Ser. No. 240,724

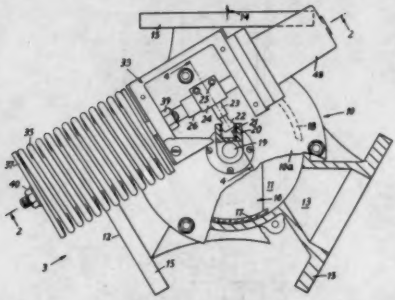
Claims priority, application Great Britain, Apr. 6, 1971, 8,893/71

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.47 **7 Claims**

A valve which provides an inlet port and two outlet ports is controlled by a valve member which adjusts the two outlet ports so that the sum of their effective areas is constant for all settings of the valve. The valve member is adjusted by a fluid pressure responsive device comprising a bellows or diaphragm which is disposed in a chamber and which is connected to the valve member by an actuating rod. Pressure fluid at a control

pressure is applied in the chamber. Movement of the rod by the bellows or diaphragm in response to an increase of pressure in the chamber is resisted by a spring. A stop limits movement of the rod due to the spring force.



3,763,893

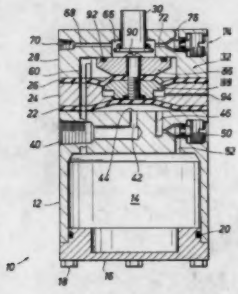
PNEUMATIC ACCUMULATOR

Carl P. Kriegel, 4018 Lockwood, Houston, Tex.

Filed Apr. 3, 1972, Ser. No. 240,685

Int. Cl. F16k *11/02, 31/385*

U.S. Cl. 137—625.6 **10 Claims**



A pneumatic accumulator which includes a housing and a reservoir for accumulating a volume of air under pressure. An air supply is provided through an orifice providing a controlled rate of filling the accumulator to line pressure. Air is bled from the reservoir at a slower rate. A slidable piston, operating a pair of diaphragms, closes off flow into the reservoir when operated. The piston is snap acting, moving to a second piston permitting the reservoir to fill but blocking drainage of the reservoir.

3,763,894

SEQUENTIALLY OPERABLE CONTROL VALVE FOR A STEAM TURBINE

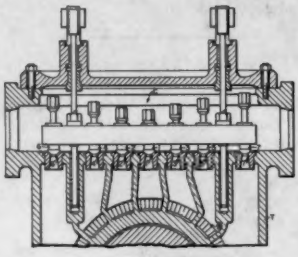
Charles A. Meyer, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Calif.

Filed June 16, 1971, Ser. No. 153,503

Int. Cl. F16k *1/06*

U.S. Cl. 137—630.19 **8 Claims**

A sequentially operable control valve for an axial flow steam turbine having a plurality of plugs which successively lift from their seats, the plugs and seats having surfaces which cooperatively produce consecutive throttling stages as steam passes therebetween, the first plug to lift off its seat having the greatest number of consecutive throttling stages and plugs which successively lift off their seats having a smaller number of consecutive throttling stages, the velocity through the consecutive throttling stages being slightly less than the speed of sound as the plug lifts, thus keeping the intensity of vibration and noise produced by this valve at a low level.



3,763,895

TUBULAR METAL CAN BODY

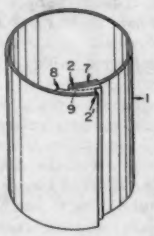
Kazuo Okubo, Tokyo; Hiroshi Ueno, Kawasaki; Minoru Sasaya, Yokohama; Takashi Toyama, and Michiko Tsurumaru, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed June 15, 1971, Ser. No. 153,290

Claims priority, application Japan, June 22, 1970, 45/53511; May 20, 1971, 46/33572

Int. Cl. F16l *9/00*

U.S. Cl. 138—170 **13 Claims**



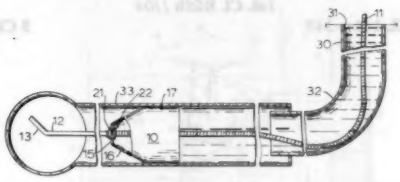
A tubular metal can body wherein the dissolving of metal in the contents of the can is prevented, said can body comprising a metal blank whose longitudinal marginal portions are joined to each other by a lap side seam through adhesive layers of a thermoplastic organic polymer, said both marginal portions of the metal blank each including two opposing surfaces, a cut end surface and shearing burr projecting from one corner of the cut end portion, said lap side seam being formed by the integral joining of an in-side adhesive layer in a continuous ribbon form of a thickness of from 15 to 200 microns which completely covers both the inner and outer surfaces of the marginal portion of the metal blank located inside the can body, cut end surface and shearing burr and adheres firmly to these surfaces, and an outside adhesive layer in a continuous ribbon form of a thickness of 5 to 100 microns which covers at least the inner surface of the marginal portion of the metal blank located outside the can body and adheres firmly to the surface said outside adhesive layer adhered firmly to the inner surface of the metal blank having a width larger than that of the lap side seam, and extending in the circumferential direction beyond the turning point of the inside adhesive layer at the seam portion and thus being firmly adhered to the inside of the metal blank, and a method for its production.

3,763,896

PLUGGING A HOME SERVICE SEWER LINE

Frederick F. Horne, Carmel Valley, and Gerald G. Vanderlans, Lodi, both of Calif., assignors to Airrigation Engineering Company, Inc., Carmel Valley, Calif.

Filed Jan. 7, 1972, Ser. No. 216,171
Int. Cl. F16l 55/10
U.S. Cl. 138—89 5 Claims



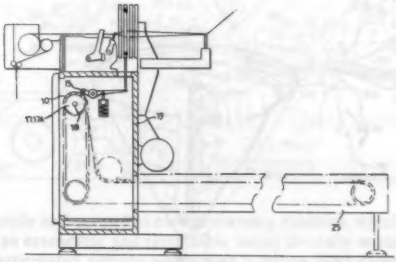
A system for applying an aqueous chemical solution to a home-service sewer line. A special elastomeric plug is used on the end of a flexible cable. This plug has a stiff radial portion smaller than the smallest pipe-line used in the home service line, a cylindrical portion having a diameter substantially equal to that of the largest pipe in the home service line, and a frustoconical portion connecting the two other portions. During insertion the flexible cable is rotated as it is inserted. Preferably, a semi-stiff metal rod or springy cable extends forward of the plug and is secured to the end of the flexible cable, to help the plug to turn corners of elbows and follow curves. If the home service line should have a smaller pipe succeeded by a larger pipe, the plug collapses inside the smaller pipe for passage through it and then resumes its normal shape in the larger pipe. When liquid is supplied at the house clean-out, the cylindrical portion of the plug expands and forms a tight seal against the pipe, enabling soak treatment by the chemical. Then, by pulling on the flexible cable, the plug can be pulled inside out, so that the liquid drains, and the plug can then be retracted.

3,763,897

CHAIN TYPE LOOM SHEDDING MECHANISM

John Dalton Griffith, Littleover, England, assignor to Bonas Machine Company Limited, Staffordshire, England

Filed Feb. 29, 1972, Ser. No. 230,317
Claims priority, application Great Britain, Mar. 2, 1971, 5,836/71
Int. Cl. D03c 5/00, 13/00, 15/00
U.S. Cl. 139—78 6 Claims



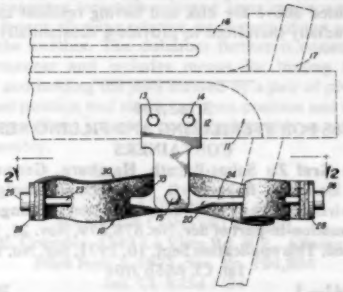
A chain type shedding mechanism for a loom and characterized in that pattern forming members are in the form of profiled chain-like links adapted to be removably connected to form endless pattern control chains, said links being connectable in any desired manner to enable any desired sequence of movement or lack of movement of a heald frame. The links are profiled to cause motion of the heald shaft having an accurately profiled peripheral surface in accordance with a displacement curve of any known form to produce controlled finite acceleration to a cooperating follower member.

3,763,898

CHECK STRAP ASSEMBLY

Philip J. Shivell, 1301 Belmeade Dr., Kingsport, Tenn.

Filed Mar. 17, 1972, Ser. No. 235,685
Int. Cl. D03d 49/40
U.S. Cl. 139—161 S 20 Claims



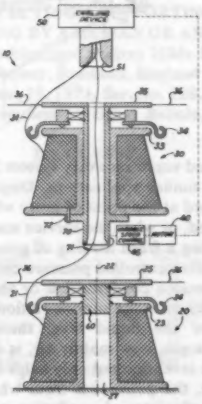
A check strap assembly for use in controlling limits of movement of a loom picker stick, wherein the check strap "per se" is constructed of a superimposed strap element. Each strap element includes a plurality of openings detailed in spacing such that when the straps are positioned and supported on a guide rod, they will define a major loop for receiving a loom picker stick therethrough and will define a pair of minor loops located on each side of the major loop. The strap openings provide frictional engagement with the supporting guide rod to increase the effectiveness of the strap assembly in controlling limits of movement of a loom picker stick. The pair of minor loops also form a cushioning means or bumper elements between the major loop and the limit stop means on the supporting guide rod. The strap assembly includes impact receiving means constructed of a pair of strap elements, each strap element having openings slidably supported on the guide rod such that the strap element surrounds an outer portion of one of the minor loops and extends into the major loop for receiving the impact from a loom picker stick.

3,763,899

WIRE TWISTING DEVICE

John F. Orlandi, Lombard, Ill., assignor to Belden Corporation, Chicago, Ill.

Filed Jan. 26, 1972, Ser. No. 220,866
Int. Cl. B21f 7/00
U.S. Cl. 140—149 2 Claims



A device for forming a twisted pair of wires comprises a rotatable supply spool mounted above a stationary supply

spool with the rotatable spool having an axial opening for permitting the passage therethrough of the wire from the stationary spool to a take-up reel or cabling device. The rotatable supply spool is driven at a predetermined angular velocity relative to the rate of the take-up device to provide the desired degree of twist. Coaxially mounted above the upper flange of each spool is a round disk which is slightly larger than the flange and is rotatable to provide unwinding of the wire from the spool and around the flange in a substantially constant-tension manner. Each spool is also provided with a hub coaxially mounted above the disk and having resilient spokes extending radially therefrom to provide a substantially uniform tension.

3,763,900

PROCESS FOR STERILIZING AND FILLING AEROSOL CONTAINERS

Hubertus Graf Zu Solms-Baruth, Hamburg, Germany, and Egon Honisch, Rapperswil, Switzerland, assignors to Milchwirlschaftlicke Forschungs und Untersuchungs GmbH

Continuation-in-part of Ser. No. 878,879, Nov. 21, 1969, abandoned. This application Sept. 10, 1971, Ser. No. 179,533

Int. Cl. B65b *3/04*

U.S. Cl. 141—3 **29 Claims**

The invention provides a process for sterilizing and filling of aerosol containers with sprayable or foamable products which briefly comprises providing a sealed and valved-empty aerosol container, sterilizing the sealed aerosol container, filling the sealed sterile aerosol container first with a propellant gas, and, thereafter, filling the sealed sterile propellant-containing aerosol container with the sprayable or foamable product.

3,763,901

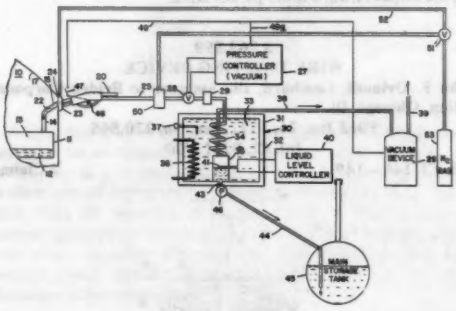
METHOD OF PREVENTING LOSS OF HYDROCARBONS TO ATMOSPHERE

Clare Kenneth Viland, P.O. Box 284, Bodega Bay, Calif.

Continuation-in-part of Ser. No. 78,843, Oct. 7, 1970, abandoned. This application Jan. 25, 1971, Ser. No. 109,226

Int. Cl. B65b *3/04*

U.S. Cl. 141—8 **17 Claims**



A self-contained vapor recovery system for gasoline service stations and for similar applications. Displaced hydrocarbon gases are collected at the point of entry when a vehicle's fuel tank is being filled, or when the service station's main storage tanks are receiving a fresh loading of gasoline. These vapors are collected under controlled pressure conditions and passed through a refrigerated condensation or absorption zone, and the liquid is returned to the service station's storage tankage, preferably below the liquid level there. The essentially hydrocarbon-free gas, now mainly air, is discharged into the atmosphere. The invention not only helps conserve a valuable natural resource, the petroleum from which the gasoline is made, but also alleviates air pollution or smog formation, since unburned hydrocarbons in the earth's atmosphere react under the influence of sunlight with nitrogen oxides and carbon monoxide from any source of combustion, to form a typical smog blanket.

3,763,902

FUEL INJECTION VALVE

Gerald E. Donahue, Irvington, N.J., assignor to Ronson Corporation, Woodbridge, N.J.

Filed Apr. 18, 1972, Ser. No. 245,113

Int. Cl. B65b *1/04*

U.S. Cl. 141—349 **5 Claims**

A fuel injection valve for use on a container of a liquefield volatile fuel such as butane which is adapted to be used with either stem-type, disc-type or ball-type filling valves associated with a lighter, candle or cooking range utilizing butane as a fuel. The fuel injection valve includes a fuel dispensing nozzle which is depressed during a fueling operation against a spring pressure to open a path for fuel flow from inside the fuel container through the nozzle. The end of the fuel nozzle is provided with a tapered bore segment to operably contact and actuate a stem member of a stem-type filling valve to open the valve and nodular extensions are provided on the end of the fuel nozzle to contact and depress a disc member of a disc-type filling valve or ball member of a ball-type filling valve to open the valve.

3,763,903

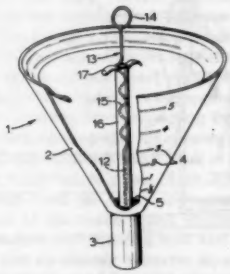
FUNNELS

Guy David Ouchterlony, 47 Oriole Gardens, Toronto, Ontario, Canada

Filed Dec. 10, 1971, Ser. No. 206,677

Int. Cl. B65b *39/00*; **B67c** *11/04*

U.S. Cl. 141—201 **6 Claims**



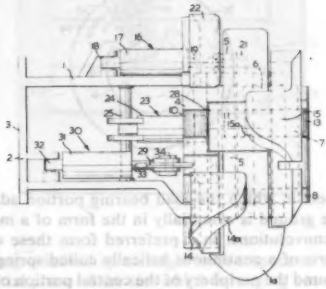
A funnel which automatically terminates feed from the funnel, comprises a float which is moveable into and out of spout closing position. The float carries a handle member which extends upwardly into the main body portion of the funnel and means are provided on the handle to lock the float in spout closing position.

3,763,904

LIMBING HEAD

John E. Eynon, 103 Sunset Bay, Port Arthur, Ontario, Canada

Filed Sept. 15, 1971, Ser. No. 180,721
Claims priority, application Canada, Sept. 22, 1970, 093729
Int. Cl. A01g 23/00
U.S. Cl. 144—2 Z 7 Claims



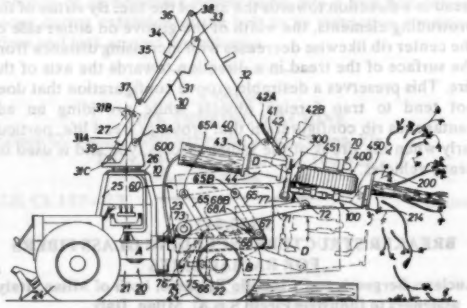
A limbing head for removing limbs from a tree includes a body and a pair of curved limbing arms, each pivotally secured to the body at laterally spaced positions for receiving a tree between the arms. Means for pivoting a first arm towards and away from the second arm are provided, together with means connecting the second arm to the first arm to cause the second arm to pivot simultaneously with the first arm towards and away from the first arm.

3,763,905

TREE HARVESTER

Douglas D. Hamilton, Mount Royal; Joseph J. R. Boivin, Montreal, and Domenico Benedetto, Vancouver, all of Canada, assignors to Logging Development Corporation, Montreal, Quebec, Canada

Continuation of Ser. No. 794,673, Jan. 28, 1969, abandoned.
This application Nov. 30, 1971, Ser. No. 203,135
Claims priority, application Canada, Jan. 29, 1968, 011,008
Int. Cl. A01g 23/02
U.S. Cl. 144—3 D 5 Claims



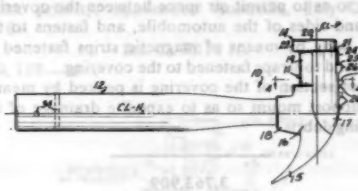
A mobile self-propelled tree processing machine which includes an extendible and retractable boom pivotally mounted on an articulated vehicle and having a felling head assembly attached to the free end of the knuckle boom. The felling head includes a grapple and shear assembly mounted on a common frame. Attached also to the vehicle is a tree processing assembly or package which includes a delimber of the stripper type, a shear, and tree feed means interposed therebetween and secured to a common frame which is connected to the vehicle by a pair of arms vertically movable for selectively moving the processing assembly relative to a cradle also attached to the vehicle and for receiving logs discharged from the processing assembly. The processing assembly is vertically movable to minimize vertical drop of processed logs onto those previously deposited in the cradle. The cradle is movably mounted on the vehicle to facilitate dumping the same. The tree processing assembly is of a side feed type whereby a tree may be inserted laterally into all of the units simultaneously, and in order to effect this, the delimber includes stripper arms pivotally mounted on a pair of jaw members pivotally secured to a frame. The delimber further is constructed in such a manner that means is provided to bias the arms to engage a tree with selected arms interconnected by resilient means allowing relative movement of the arms relative to one another. The delimber further is constructed in such a manner and includes means for biasing the arms together and holding the jaws formed by a pair of pivot levers to a closed position and also to an open position and is accomplished by resilient means in combination with an over-centre lever assembly.

3,763,906

HAMMER CONSTRUCTION

Thomas E. Crowder, 1343 La Vista Rd. N.E., Atlanta, Ga.

Filed Nov. 2, 1971, Ser. No. 194,884
Int. Cl. B25d 1/04
U.S. Cl. 145—30 A 4 Claims



A hammer construction including a support member overhanging the hammer poll and defining a plurality of nail body receiving slots of different lengths perpendicular to the face of the poll in an ordered arrangement and a nail head receiving recess at the upper end of each slot. A head supporting projection overlies each recess and defines a hooked tip extending over the next adjacent slot intermediate its ends to assist in retaining a nail in the slot and the hammer head is magnetized to do the same. The hammer head may be provided with a V-shaped flange member to receive nail heads thereunder and remove same. The handle may be equipped with a measuring device or a leveling device.

3,763,907

UNIT FOR PROTECTING A SUPPORTING SURFACE FROM SOILING BY A HUMAN OR AN ANIMAL

Horace Reginald Hockley, and Audrey Hilda Hockley, both of 28 Green Curve, Surrey, Banstead, England

Filed Mar. 29, 1971, Ser. No. 128,943
Claims priority, application Great Britain, Apr. 7, 1970, 16,526/70
Int. Cl. B65d
U.S. Cl. 150—1 16 Claims

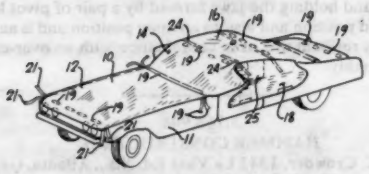
A unit for protecting a supporting surface from soiling by a human or an animal comprises two layers of absorbent materi-

al which are permanently secured together, or are integral with each other to form a container for a sheet of liquid-impervious material which is interposed between the two layers and which is removably secured to the container.

3,763,908
AUTOMOBILE COVER

Reta R. Norman, Dallas, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Oct. 27, 1971, Ser. No. 193,016
Int. Cl. B60j *11/00*
U.S. Cl. 150—52 K **2 Claims**



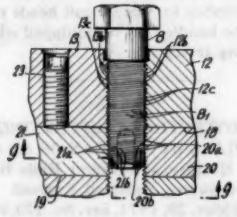
A protective covering for parked automobiles that covers the automobile upper surfaces, together with extendible flaps which cover the sides of the automobile. The covering is mounted so as to permit air space between the covering and the top and sides of the automobile, and fastens to the automobile body by means of magnetic strips fastened to the covering, and to straps fastened to the covering.

The roof section of the covering is peaked by means of a central support mount so as to expedite drainage of rain or other falling debris.

3,763,909
SELF-LOCKING BOLT

Jordan H. Stover, III, Tucson, Ariz., assignor to Rockford Screw Products Company, Rockford, Ill.

Continuation-in-part of Ser. No. 770,359, Oct. 24, 1968, Pat. No. 3,601,830. This application June 2, 1971, Ser. No. 149,152
Int. Cl. F16b *39/30*
U.S. Cl. 151—14 R **5 Claims**

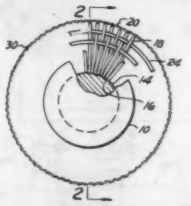


A thread is rolled on the bolt blank around a predetermined length thereof, and during the thread-rolling operation the bolt is indented at diametrically opposed parts of its threaded length, to give a portion of this length a generally elliptical cross-section which is near but spaced from the leading end of the bolt. The indented portion surrounds a central axial bore which opens through the leading end of the bolt, the bore diameter being 0.35D to 0.50D and the bore length being about 1D, where D is the nominal outer diameter of the thread on the bolt. The pitch diameter of the thread on the major axis of the elliptical cross-section is slightly greater than the normal pitch diameter above the elliptical section, such as about 1.03 times the normal pitch diameter, to provide the self-locking action. Thus the friction which causes the self-locking action occurs along the flanks of the threads, rather than at the crests and roots.

3,763,910
RESILIENT WHEEL

Edward M. Hawes, 32418 Birkshire, St. Clair Shores, Mich.

Filed Dec. 23, 1971, Ser. No. 211,589
Int. Cl. B60b *9/06*
U.S. Cl. 152—14 **14 Claims**

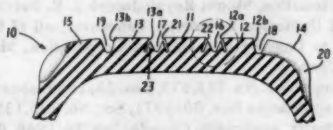


A wheel in which the load bearing portion adapted to engage the ground is essentially in the form of a multiplicity of spring convolutions. In a preferred form these convolutions form parts of a continuous helically coiled spring bent to extend around the periphery of the central portion of the wheel.

3,763,911
TIRE TREAD WITH PROTRUDING ELEMENTS BETWEEN ADJACENT RIBS

Jean Bernard Montagne, Cebazet, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, France

Filed Dec. 8, 1971, Ser. No. 205,821
Claims priority, application France, Dec. 24, 1970, 7046762
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 R **4 Claims**



A tire tread is formed with protruding elements between adjacent ribs. At least the center rib is undercut so that its width decreases with increasing distance from the surface of the tread in a direction towards the axis of the tire. By virtue of the protruding elements, the width of the groove on either side of the center rib likewise decreases with increasing distance from the surface of the tread in a direction towards the axis of the tire. This preserves a desirable groove configuration that does not tend to trap foreign objects while providing an advantageous rib configuration that prolongs tread life, particularly when the tire is of the radial-carcass type and is used on heavy vehicles.

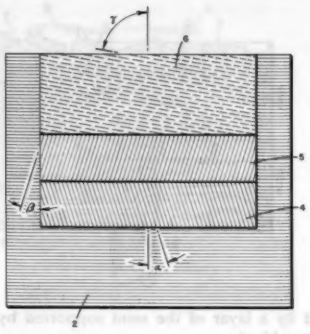
3,763,912
BREAKER STRUCTURE INCLUDING GLASS FIBERS FOR RADIAL TIRES

Luciano Bergomi, and Cinisello Balsamo, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed July 7, 1971, Ser. No. 160,491
Claims priority, application Italy, July 10, 1970, 27.242 A/70
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 DM **3 Claims**

A pneumatic tire for vehicles which comprises a radial carcass and a breaker structure which is formed by at least two superimposed layers of cord fabric in which the cords are parallel to one another in each layer but are inclined with respect to the mid-circumferential plane of the tire in such a way that the direction of the cords in one layer crosses with the direction of the cords of the adjacent layer and an additional layer comprising a compound incorporating elongated

particles of a material having a high modulus of elasticity but being resistant to compression, the longitudinal axes of the

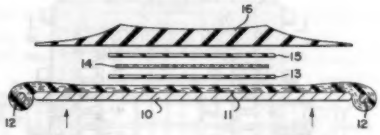


particles being oriented at an angle with respect to the mid-circumferential plane of the tire which is ranging between 60° and 90°.

3,763,913
TIRE HAVING KNIT BELT

Robert Williams French, Cuyahoga Falls, and James Dennis Gardner, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 20, 1972, Ser. No. 219,434
Int. Cl. B60c 9/18
U.S. Cl. 152—361 R **6 Claims**

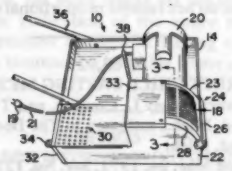


The invention relates to producing a cylindrically-built belted tire, the subsequent expansion of which extrudes columns of an adjoining rubber layer into a knit belt, whose loops during extension of the belt to its restrictive condition close and lock around the columns.

3,763,914
TIRE TRUEING MACHINE

Edison G. Vance, 6200 Nebraska Ave., Tampa, Fla.

Filed July 8, 1971, Ser. No. 160,628
Int. Cl. B29h 21/08
U.S. Cl. 157—13 **9 Claims**



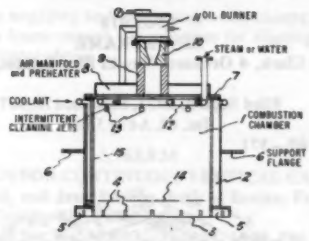
A device for trueing automotive tires by abrasively removing non-symmetrical, non-concentric irregularities or anomalies in the tread face of "out-of-round" tires. An electric motor, operatively mounted on a portable platform is mechanically coupled to a cutting assembly comprising a plurality of blades mounted within a cylindrical drum.

The cutting assembly is arranged on the platform whereby the cutting blades will operatively engage the tread face to grind the eccentricities from the face of the tire as the tire is rotated by an external driving means. To prevent scattering of the material buffed or ground from the tread face the cutting assembly is partially enclosed in an accumulator housing adapted to catch and collect this residue. A pluraltity of apertures is formed in the rear portion of the housing which permits the air pressure built up in advance of the high speed rotation of the blades to flow rewardly through the housing carrying the material residue rewardly under the force of the resultant pressure differential. Attached to the aft portion of the platform is a substantially U-shaped handle which in combination with a series of rollers attached to the under portion of the platform permits movement of the device over the supporting surface.

3,763,915
EVAPORATIVE TREATMENT OF LIQUIDS BY SUBMERGED COMBUSTION

Ian James Perry; Bruce Dunstan Watson; John Geoffrey Lagerche; George Alan Denman; Norman William Irvine; Thomas Joseph Goding, and Graham Douglas Moffett, all of Queensland, Australia, assignors to Copper Refineries Pty. Limited, Townsville, Queensland, Australia

Filed July 21, 1971, Ser. No. 164,814
Claims priority, application Australia, July 22, 1970, 1923/70
Int. Cl. B01d 1/14
U.S. Cl. 159—16 A **4 Claims**



Method and apparatus for the evaporative treatment of liquid usable in the electrolytic refining of copper in which fuel is burned in an open-bottomed otherwise closed chamber in which the bottom of the chamber is below the surface of a bath of said liquid, the interior surfaces of the chamber are cooled by application of cooling media to the chamber exterior, the interior surfaces of the chamber are periodically flushed by steam to remove accumulation thereon and the precipitated matter is removed from the bath.

3,763,916
WINDOW SHADE MOTOR

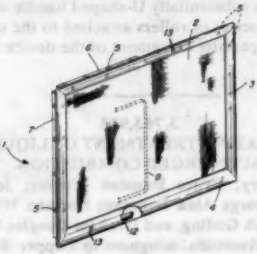
Robert C. Gossling, Cincinnati, Ohio, assignor to Clopay Corporation, Cincinnati, Ohio

Filed Dec. 27, 1971, Ser. No. 211,944
Int. Cl. E06b 9/20
U.S. Cl. 160—318 **10 Claims**

A window shade motor includes improved apparatus for securing a spring to a body element of the motor. The body element has a recess and the spring includes a bent portion near its end. The bent portion extends into and engages the

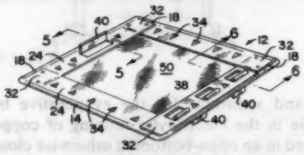
edges of the recess in order to secure the spring against rotation with respect to the body. The end of the spring beyond the bent portion is positioned to engage the shade roller to maintain the bent portion of the spring within the recess.

3,763,917
DETACHABLE SCREEN
Ernest Antinone, 207 Waldorf Ave., Rochester, N.Y.
Filed May 22, 1972, Ser. No. 255,621
Int. Cl. A47h *3/00*
U.S. Cl. 160—354 **13 Claims**



A detachable, flexible screen is disclosed. The screen is generally employed in protecting garages, porches, terraces and summer houses from annoying pests. The screen can be detachably secured either from outside or inside the protected area.

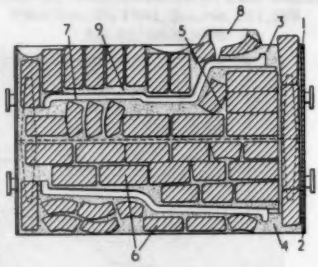
3,763,918
HINGE FRAME
Winifred Clark, 4 Orchard Way-El Pico Estates, Brooksville, Fla.
Filed Sept. 9, 1971, Ser. No. 178,967
Int. Cl. A47g *5/00*
U.S. Cl. 160—371 **13 Claims**



A support frame for solid screen or flexible sheet panel material comprising an originally elongated strip which includes a hem edge having a substantially hemispherical button tip configuration defined by a fold substantially located along the longitudinal axis of the strip. A plurality of pairs of slots having a T-shaped configuration are formed in the strip such that the strip may be turned at these points and thereby define corners of a polygon engaging the material about its periphery and providing support therefor. Hooks, serving as material connecting means; hinges, used to pivotally attach the frame; and clips used for closure means are all integrally formed in the strip and protrude from predetermined sides of the surface thereof in order to secure the material to the frame or mount the frame itself respectively.

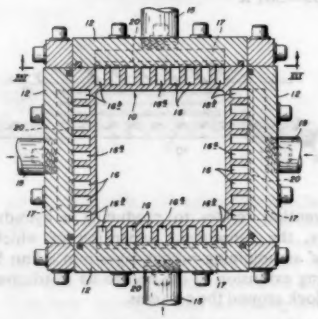
3,763,919
METHOD OF MAKING A MOLD
Per Fredrik Sundin, Jonkoping, Sweden, assignor to Hoganas AB, Hoganas, Sweden
Filed Nov. 23, 1971, Ser. No. 201,440
Int. Cl. B22c *15/22*
U.S. Cl. 164—22 **6 Claims**

The moulding material comprises porous iron blocks distributed around the mold cavity and sand containing a binder whose binding action is destructable by heat. The surface of the mold cavity is substantially wholly sand. The mold cavity is



bounded by a layer of the sand supported by a backing of porous iron blocks.

3,763,920
WATER INLET CONSTRUCTION FOR CONTINUOUS-CASTING MOLDS
Paul M. Auman, Franklin Township, and Hugh E. Pry, Trafford, North Huntington Township, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.
Filed Mar. 16, 1972, Ser. No. 235,185
Int. Cl. B22d *11/02*
U.S. Cl. 164—82 **4 Claims**

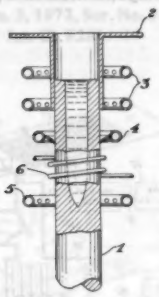


A water inlet construction for continuous-casting molds to distribute cooling water more uniformly across the mold face, and a method of introducing water. The mold has a plurality of parallel vertically extending water circulation channels between its outer wall and liner. A single inlet serves several channels at each side, which is conventional. Invention is to interpose a baffle having sloping edges between the inlet and channels. The baffle directs water to the remote channels which otherwise do not receive proportional shares.

3,763,921
DIRECT CHILL CASTING METHOD
Raymond D. Behr; Sidney L. Couling, and Turner Alfrey, Jr., all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 24, 1971, Ser. No. 127,780
Int. Cl. B22d *11/00*
U.S. Cl. 164—89 **6 Claims**

In the direct chill casting of metal ingots wherein the coolant is removed from the ingot surface shortly below the mold to permit a reheating of the ingot surface, the improvement which comprises reapplying the coolant to the ingot surface at a somewhat lower level corresponding approximately to the

level of the bottom of the molten metal pool. The improved method reduces ingot cracking and permits higher ingot casting speeds by preventing the generation of excessive internal stresses during solidification and further cooling of the ingot.



3,763,922

CONTINUOUS CASTING MACHINE WITH STORING TROUGH ON TILTABLE FRAME

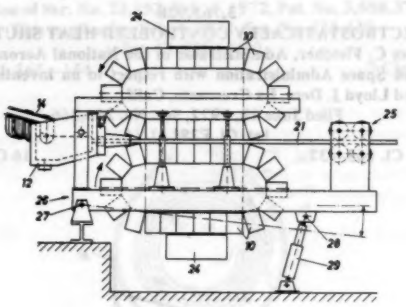
Ivan Gyongyos, Les Barzettes, Montana, Switzerland

Division of Ser. No. 133,007, April 12, 1971, abandoned. This application July 3, 1972, Ser. No. 268,620

Claims priority, application Switzerland, Apr. 15, 1970, 5558/70

Int. Cl. B22d *11/06*

U.S. Cl. 164—279 **3 Claims**



A casting machine with caterpillar-type molds is provided with tilting means to adjust the position of the entire machine including its feed trough and its advancing apparatus for the cast strip. While the machine stands still and is inclined at a low angle, metal is poured until a leading end of the strip is formed. Thereupon, the mold tracks are set into motion and simultaneously the inclination of the entire machine is increased for an optimum continuous casting operation. The casting machine is mounted on a tiltable frame controlled by a hydraulic jack.

3,763,923

EXTRACTOR FOR WITHDRAWING OR INSERTING ROLL-CLUSTERS

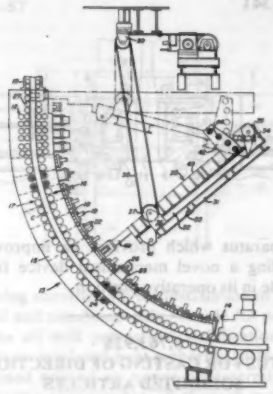
Francis Gallucci, Irwin, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1972, Ser. No. 236,915

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 **12 Claims**

An extractor for withdrawing or inserting roll-clusters of the curved roll rack of a continuous-casting machine. The extractor includes a main frame pivotally supported on a horizontal axis at the concave side of the rack. A carriage and drive means therefor are supported on the main frame. The carriage has means for engaging and supporting a roll cluster. The underside of the frame carries a mechanism for aligning the carriage with a cluster above.



3,763,924

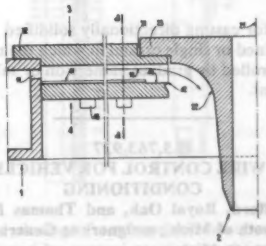
APPARATUS FOR CONTINUOUS VERTICAL CASTING

Serge Peyraud, and Jean Freiche, both of Issoire, France, assignors to Cegedur GP, Paris, France

Division of Ser. No. 739,032, June 21, 1968, Pat. No. 3,596,707. This application Jan. 27, 1971, Ser. No. 110,175

Int. Cl. B22d *11/12*

U.S. Cl. 164—283 **4 Claims**

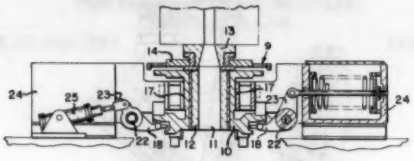


An apparatus for continuous vertical casting which includes extenders for adapting a casting frame for use with molds of different format including a member extending crosswise between the frame and mold to support the mold on the frame and to guide coolant liquid from the frame onto the outer walls of the mold.

3,763,925
ARTICLE CASTING APPARATUS

Maurice Paul Sieger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Division of Ser. No. 554,603, June 1, 1966, Pat. No. 3,640,334. This application Aug. 24, 1970, Ser. No. 66,518
Int. Cl. B22d *35/04*
U.S. Cl. 164—341 **2 Claims**

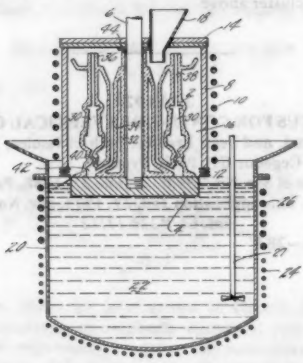


Casting apparatus which provides an improved gate assembly including a novel mechanical device for positively holding the gate in its operative position.

3,763,926
APPARATUS FOR CASTING OF DIRECTIONALLY SOLIDIFIED ARTICLES

Johann G. Tschinkel, South Glastonbury; Anthony F. Giamei, Middletown, and Bernard H. Kearn, Madison, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 15, 1971, Ser. No. 180,597
Int. Cl. B22d *27/04, 25/06*
U.S. Cl. 164—338 **13 Claims**



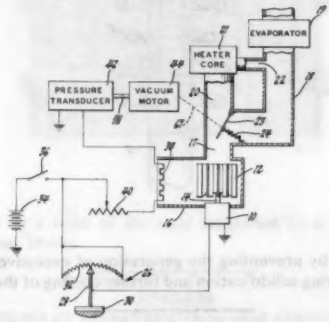
Apparatus for casting directionally solidified articles either columnar grained or single crystal in which the rate of solidification is controlled by gradual immersion or submergence by a liquid coolant.

3,763,927
HOT WIRE CONTROL FOR VEHICLE AIR CONDITIONING

John W. Stafford, Royal Oak, and Thomas P. Yasin, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 13, 1972, Ser. No. 271,550
Int. Cl. B60h *3/04*
U.S. Cl. 165—23 **3 Claims**

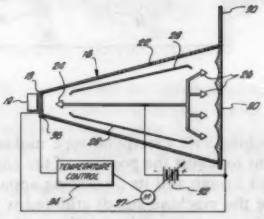
A vehicle air conditioning controller wherein a hot wire sensor is positioned at the outlet ducts of the air conditioner system for sensing the effective temperature of the conditioned air flowing therefrom taking into consideration both air velocity and temperature. The hot wire controls a vacuum transducer which supplies a regulated vacuum to a vacuum motor which positions an air mix damper to control the temperature of the air at the output of the outlet ducts so as to maintain the air flowing therefrom at a predetermined effective temperature. A bimetal temperature sensor is also provided for controlling the speed of a blower motor as a function of compartment temperature.



3,763,928
ELECTROSTATICALLY CONTROLLED HEAT SHUTTER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Lloyd J. Derr, La Crescenta, Calif.

Filed June 28, 1972, Ser. No. 266,866
Int. Cl. F28f *13/16*
U.S. Cl. 165—32 **16 Claims**

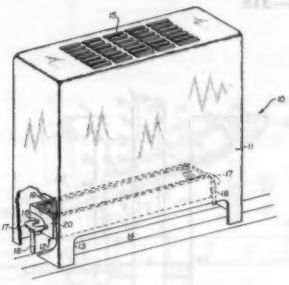


A heat transfer assembly for conducting thermal energy includes a hermetically sealed container enclosing a quantity of inert gas such as nitrogen. Two opposed walls of the container have high thermal conducting characteristics while the connecting walls have low thermal conducting characteristics. Electrodes are positioned adjacent the high thermal conducting walls and biased relative to the conducting walls to a corona potential for creating an ionic gas wind which must contact the conducting walls to be neutralized. The contact of the gas molecules permits the maximum thermal energy transfer between the walls. Baffles can be positioned adjacent the electrodes to regulate gas flow between the high thermal conducting surfaces.

3,763,929
CONVECTION HEAT EXCHANGER

Norman B. Wenig, 39 Herkimer Rd., Scarsdale, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,760
Int. Cl. F28f 1/10
U.S. Cl. 165—55 2 Claims

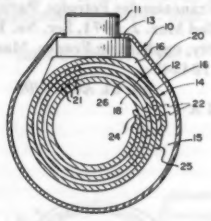


A convection heat exchanger in which the fins of a fin-and-tube assembly each have U-shaped, spaced-apart edges which define a fin surface of a given area confined between lateral boundaries spaced-apart a distance smaller than the developed length of either edge.

3,763,930
HEAT EXCHANGER

Donald J. Frost, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Division of Ser. No. 23,192, Feb. 4, 1972, Pat. No. 3,688,372.
This application Feb. 4, 1972, Ser. No. 223,430
Int. Cl. F28d 7/10
U.S. Cl. 165—154 7 Claims



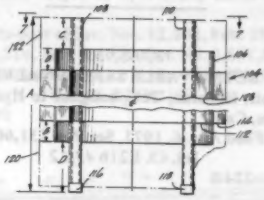
A heat exchanger in which a continuous, integral, formed sheet of heat exchange material such as heat conducting metal is shaped to provide a first area and a second area spaced from each other to provide a fluid flow space and a third area in this flow space provided with displaced turbulence producing portions in the flow space.

Because all of these areas are parts of one integral sheet a preferred embodiment of the heat exchanger is the tubular concentric type in which the first and second areas are formed as concentric cylinders and the third area also has a curved cross section and occupies the space between these two areas. This invention also includes a method of making a heat exchanger of the tubular type in which a metal sheet is provided with spaced apart first and second areas and an intermediate third area having turbulence promoting projections and then rolling the sheet upon itself to form a tube of at least three concentric parts in which the inner and outer parts are solid and spaced from each other to provide an annular flow space and the third part is located in this space and contains the turbulence promoting projections to comprise a turbulator.

3,763,931
OIL WELL PERMAFROST STABILIZATION SYSTEM

Elmer D. Waters, Richland, Wash., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Division of Ser. No. 72,715, Sept. 16, 1970. This application May 26, 1972, Ser. No. 257,458
Int. Cl. E21b 43/00, 43/24
U.S. Cl. 166—57 4 Claims

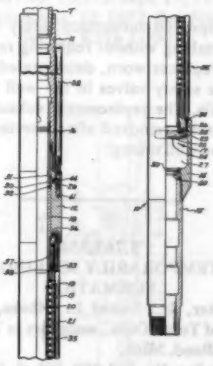


Oil well casing construction for installation in permafrost to convey hot oil and simultaneously provide for permafrost stabilization. The oil well permafrost stabilization system normally includes an insulated heat gathering surface member or shield positioned around an upper predetermined length of production casing carrying hot oil through permafrost, passively actuated heat transfer tubes closed at their lower ends and thermally coupled to the heat gathering shield along its length, and a heat exchanger connected to the upper ends of the heat transfer tubes for rejecting the heat transferred thereto whereby heat from the hot oil carried by the production casing is prevented from melting the adjacent permafrost.

3,763,932
SURFACE OPERATED, SUBSURFACE SAFETY VALVE ASSEMBLY

Robert W. Dinning, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Dec. 27, 1971, Ser. No. 211,906
Int. Cl. E21b 33/03, 43/12
U.S. Cl. 166—72 18 Claims



Opening and closing of a subsurface safety valve in a well tubing is regulated by control pressure supplied to the valve through a pressure passage extending from the valve to the well surface. Reduction in control pressure in the passage permits the valve to move to its normally closed position under the influence of a compressed spring. Repressuring the passage acts through an expansion chamber to reopen the valve against the force of the spring. A pressure bypass is provided for equalizing pressures above and below the closed valve to ease reopening of the valve. The valve may be permanent or retrievable, and in one form of the invention, a

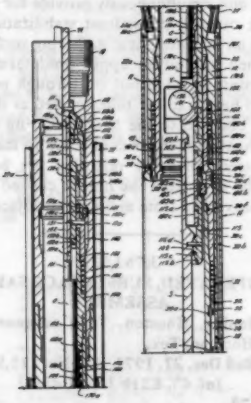
retrievable valve is landed within an inoperative, permanent safety valve. In the latter embodiment, means are provided for regulating opening and closing of the retrievable valve by pressure supplied through the pressure passage previously regulating operation of the permanent valve. In one form of the invention, the passage is provided by a small control line and in another form, the passage is provided between two concentric tubing strings.

3,763,933

RETRIEVABLE SAFETY VALVE

James D. Mott, Houston, Tex., assignor to Hydrill Company, Los Angeles, Calif.

Filed Apr. 6, 1971, Ser. No. 131,661
Int. Cl. E21b *43/12*
U.S. Cl. 166—224 S **22 Claims**



A new and improved subsurface safety valve which is inserted into well tubing without requiring removal of the tubing, and which replaces worn, deteriorated and fully or partially inoperative safety valves in the well tubing to prevent blow-outs in wells. The replacement subsurface safety valve may be subsequently removed after insertion without requiring removal of the well tubing.

3,763,934

METHOD OF TEMPORARILY SEALING A PERMEABLE FORMATION

Albert W. Coulter, Jr.; Daniel L. Gibson, and Kenneth H. Nimerick, all of Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Substitute for Ser. No. 113,089, Feb. 5, 1971, which is a continuation-in-part of Ser. No. 67,675, Aug. 3, 1970, abandoned, which is a continuation of Ser. No. 623,232, March 15, 1967, abandoned. This application Apr. 3, 1972, Ser. No. 240,791
Int. Cl. E21b *33/138*
U.S. Cl. 166—294 **2 Claims**

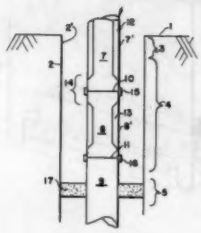
A composition is provided which may be employed for the selective sealing of permeable formations. The composition contains at least one particulate galactomannan gum which has been treated to render the gum hydrophobic in aqueous solutions having a pH of at least about 7.5; a pH control agent, and a water-soluble organic polymeric suspending agent.

3,763,935

WELL INSULATION METHOD

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation of Ser. No. 84,656, Oct. 28, 1970, abandoned. This application May 15, 1972, Ser. No. 253,170
Int. Cl. E21b *23/00*
U.S. Cl. 166—315 **10 Claims**



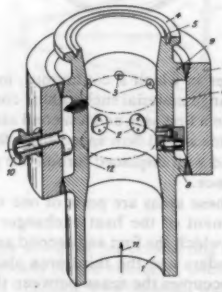
A method for terminally insulating one or more casing strings from the walls of a wellbore which includes employing annular zones in which at least part of the air has been displaced and replaced by a gas which remains gaseous under the temperature and pressure conditions obtaining in the annular zone when placed in the wellbore and which has a thermal conductivity substantially less than that of air.

3,763,936

METHOD AND APPARATUS FOR INJECTING FIRE EXTINGUISHING LIQUIDS INTO A FUEL-CARRYING PIPE

Georges H. Menage, Neuilly Sur Seine, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Mar. 2, 1971, Ser. No. 120,226
Claims priority, application France, Mar. 3, 1970, 7007569; Feb. 9, 1971, 7104249
Int. Cl. A62c *1/06*
U.S. Cl. 169—1 A **25 Claims**



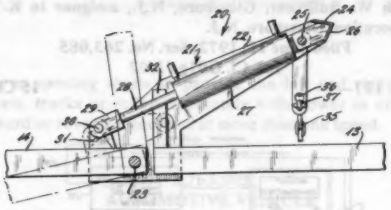
A method and apparatus to prevent ignition or inhibit re-ignition of a fuel issuing from a conduit in which an extinguishing liquid is injected into the fuel upstream of the conduit outlet and a turbulence is established by the injection and/or by the conduit cross-section which intimately mixes the fuel and liquid throughout the cross-section of the fuel upstream of the outlet.

3,763,937

AUXILIARY TOOL BAR LIFT MECHANISM

Philip H. Nuckols, Blytheville, Ark., assignor to Paul Abbott Co., Inc., Blytheville, Ark.

Filed June 16, 1972, Ser. No. 263,493
Int. Cl. A01b 49/00
U.S. Cl. 172—311 4 Claims



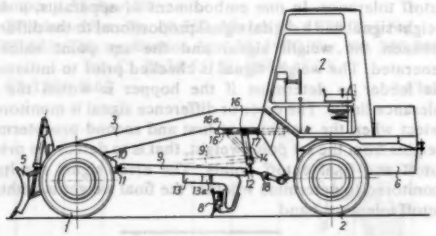
Tool bar apparatus having a main portion supported by a mast hitch of a propelling vehicle and having at least one auxiliary portion swingably mounted on the main portion in such a manner as to provide maximum lateral movement of earth-working implements carried by the tool bar portions to accommodate various row spacings. The lift apparatus is fixed to the end of the main portion of the tool bar and swingably supports the auxiliary portion of the tool bar.

3,763,938

SUSPENSION FOR A PLOUGHSHARE ASSEMBLY OF A GRADING MACHINE

Helmut Brodersen, Angelholz, Germany, assignor to Maschinenbau Ulm GmbH

Filed Mar. 2, 1972, Ser. No. 231,173
Claims priority, application Germany, Mar. 3, 1971, P 21 10 200.1
Int. Cl. C02f 3/12
U.S. Cl. 172—789 11 Claims



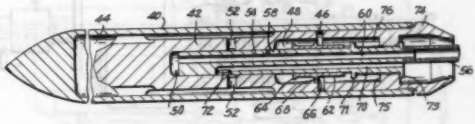
A soil tilling machine comprising a ploughshare assembly supported on a supporting member between the wheel axles for rotation, and capable of being locked in an adjusted angular position in relation to the longitudinal axis of the machine. The supporting member is pivotally attached at its front end to a frame of the machine so as to be capable of being adjusted in elevation and in lateral tilted position by means of hydraulic cylinders which are connected to the free rear end of the supporting member at laterally offset sides thereof and to a suspension body which is longitudinally displaceable on the frame.

3,763,939

REVERSIBLE IMPACT DEVICE FOR DRIVING HOLES IN EARTH

Boris Vasilevich Sudnishnikov, Krasny prospekt, 56, kv. 59; Alexander Dmitrievich Kostylev, ulitsa Derzhavina 19, kv. 44; Konstantin Stepanovich Gurkov, ulitsa Derzhavina 19, kv. 28; Konstantin Konstantinovich Tupitsyn, ulitsa Novogodnaya, 44, kv. 23; Vladimir Vasilievich Klimashko, ulitsa Kamenskaya 84-v, kv. 33, and Vladimir Dmitrievich Plavskikh, ulitsa Krylova, 3, kv. 37, all of Novosibirsk, U.S.S.R.

Continuation-in-part of Ser. Nos. 12,208, Feb. 19, 1970, and Ser. No. 53,216, July 8, 1970, Pat. No. 3,651,874. This application Nov. 1, 1971, Ser. No. 194,300
Int. Cl. E21b 1/08
U.S. Cl. 173—91 3 Claims



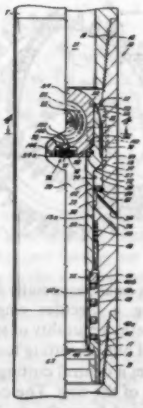
A pneumatically operated impact action self-propelled reversible device for driving holes in the earth by compacting the soil around the hole being made includes a housing having a pointed driving end portion and a rear end portion. The impact member is reciprocated interiorly of the housing in operation of the mechanism under the action of compressed air to deliver successive impacts upon the housing. An air distributing mechanism including an air supply sleeve associated with the impact member and connected with an air conduit member is provided to control the supply of air to front and rear working chambers within the housing.

3,763,940

METHOD AND APPARATUS FOR AUTOMATIC MUD DIVERTER VALVE

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 73,379, Sept. 17, 1970, abandoned. This application Aug. 23, 1972, Ser. No. 283,306
Int. Cl. E21b 33/00
U.S. Cl. 175—65 20 Claims



A tubular member positioned above a jet nozzle drill bit in a drill string includes a rotatable ball valve which closes to automatically divert drilling fluid and the like in the well bore if the jet nozzles become clogged thus permitting continued circulation of the fluid. The mud diverter valve attempts to prevent

clogging of the jet nozzles by maintaining channeled openings in the rotatable ball valve unclogged, but diverts the drilling fluid into the annulus between the drilling string and the well bore if the channelled openings become clogged for continued circulation of the fluid.

3,763,941

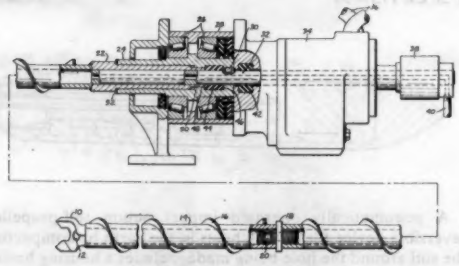
APPARATUS FOR WET DRILLING

Donald L. Leibee, Belfry, Ky., and Seibert S. Oaks, Everett, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed May 5, 1972, Ser. No. 250,643

Int. Cl. E21b *3/02*

U.S. Cl. 175—170 **5 Claims**



A wet drilling arrangement in which an auger-like drill stem has a drill bit secured to one end and a drive motor secured to the other end for rotating the drill stem and bit. The bit has a fluid passage therethrough and the drill stem is hollow and the shaft of the drive motor is also hollow and a rotary fluid connector is mounted on the shaft of the drive motor at the end thereof opposite the drill stem whereby fluid, such as water, can be supplied to the region being drilled by the bit while the fluid connection is free of working loads.

3,763,942

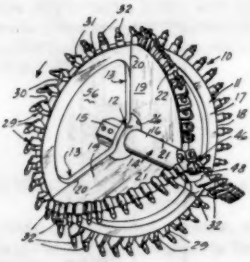
AUGER HEAD

Merle E. Levitt, Shumway, Ill., assignor to Contracting & Material Company, Evanston, Ill.

Filed Feb. 25, 1972, Ser. No. 229,410

Int. Cl. E21b *9/02*, *13/04*

U.S. Cl. 175—354 **10 Claims**



An auger or boring head, especially for horizontal rock and earth drilling having a circular ring of circumferentially spaced tool bits or teeth, a plurality of spokes or fins with leading ends carrying tool bits or cutting teeth in convex curved or arcuate contours from a central cutting point forwardly of the ring to the periphery of the ring. The cutting teeth on the ring project radially outward from the periphery thereof and are tilted forwardly in the direction of rotation of the auger head. The cutting teeth on the spokes or fins project forwardly, are tilted toward the direction of rotation of the head and are also tilted backwardly to present the tip end of each tooth in a straight forward direction to the surface which it is cutting. In addition, the teeth are staggered so that successive teeth will not have the same cutting track. A head or socket is provided in the center of the auger head for connection to a drill rod or stem. Large open areas are provided through the ring between the spokes or fins, and the earth or rock cut by the head is free to flow through these spaces to a spiral conveyor which preferably has it leading edge behind one of the spokes or fins.

3,763,943

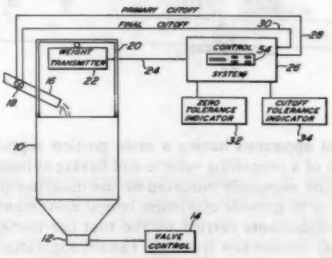
MODULAR BATCH WEIGHING CONTROL SYSTEM AND METHOD

Kenneth W. Bullivant, Glassboro, N.J., assignor to K-Tron Corporation, Glassboro, N.J.

Filed June 15, 1972, Ser. No. 263,085

Int. Cl. G01g *13/02*

U.S. Cl. 177—1 **15 Claims**



A batch weighing method in which a feeder having a fast and a slow feed rate feeds a hopper being weighed by a weighing means producing a signal indicative of the weight of the hopper. The output signal of the weighing means is first checked to determine whether or not it is within a zero tolerance band before the feeder is turned on. The hopper is then filled at the fast feed rate by the feeder until the hopper is within a predetermined weight of the set point or desired weight. When this weight is reached, called the primary cutoff, the feeder is changed to the slow feed rate. The feeder continues to feed material into the hopper at the slow feed rate until a weight is reached which is a second predetermined weight below the set point weight. At this weight, the feeder is shut off and the material falling from the feeder will bring the weight of the hopper up to set point weight. The weight of the hopper may then be checked to determine whether it is within a predetermined weight of the final set point weight, called a cutoff tolerance. In one embodiment of apparatus, a digital weight signal and a digital signal proportional to the difference between the weight signal and the set point value are generated. The weight signal is checked prior to initiation of the feeder to determine if the hopper is within the zero tolerance limits. The error or difference signal is monitored to detect when the weight is at first and second predetermined weights from the set point weight, that is to detect the primary cutoff and final cutoff points. The error signal results are monitored to determine whether the final weight is within the cutoff tolerance band.

3,763,944

STEERING TRANSMISSION MECHANISM AND VEHICLES WITH RIGIDLY MOUNTED AXLES INCORPORATING SAID MECHANISM

Benno Kaltenegger, Kurhausstr. 77–79 5202, Hennef, Sieg, Germany

Filed Feb. 23, 1972, Ser. No. 228,678

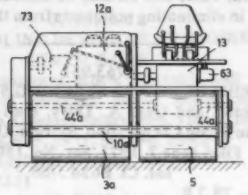
Claims priority, application Germany, Feb. 26, 1971, P 21 09 177.0; Feb. 26, 1971, P 21 09 120.3

Int. Cl. B62d *11/12*

U.S. Cl. 180—6.2 **6 Claims**

Vehicles of various types having rigidly mounted axles include a steering transmission mechanism comprising a plurali-

ty of shafts, gears and clutches capable of both driving and steering the vehicles. The plurality of clutches which may be selectively energized serve to interconnect selected gears with



their supporting shafts to provide the left and right sets of wheels, tracks or rollers separately with power in either the forward or reverse directions at more than one speed.

3,763,945

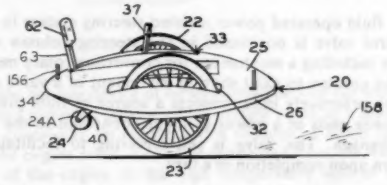
AUTOMOTIVE VEHICLE

Oscar L. Danielson, 1845 Nelson Rd., Raton, N. Mex.

Filed July 15, 1971, Ser. No. 162,913

Int. Cl. B62d *11/06*

U.S. Cl. 180—6.66 **8 Claims**



Highly maneuverable and sturdy automotive vehicle with movable wheel drive means that permits selective joint or separate actuation of parallel drive and steering wheels, each rotatably supported on an integral shell and frame structure of great dimensional stability and strength.

3,763,946

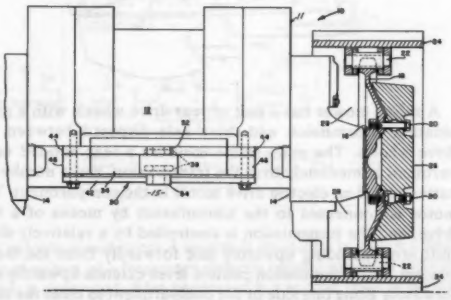
FUNCTIONAL COUNTERWEIGHT SYSTEM FOR A TRACK LAYING TRACTOR

Charles George Termont, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 18,562, March 11, 1970, Pat. No. 3,680,651. This application Apr. 21, 1972, Ser. No. 246,208

Int. Cl. B62d *55/12*; **B60b** *15/28*

U.S. Cl. 180—9.62 **1 Claim**



A functional counterweight system is provided for a track laying tractor and includes first counterweights secured respectively to the outer faces of the track drive sprockets and a second counterweight secured to the underside of the tractor transmission housing between the final drive housings. The first counterweights serve functionally as guards for the drive sprockets and the second counterweight serves functionally as a drawbar and as a bottom guard for the transmission housing.

3,763,947

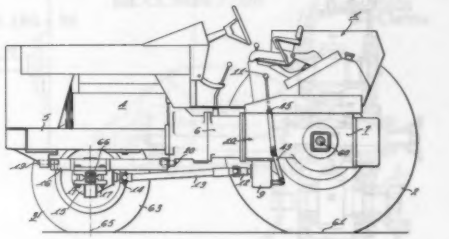
TRACTOR FOUR WHEEL DRIVE

Donald W. Longshore, New Berlin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 21, 1971, Ser. No. 182,376

Int. Cl. B60k *17/06*

U.S. Cl. 180—44 R **10 Claims**



A four wheel drive for a vehicle having means for synchronizing the ground speeds of the front wheels and the rear wheels through selectively different drive ratios between the front and rear wheels as the front wheel rolling radius is changed.

3,763,948

FOUR WHEEL DRIVE TRACTORS

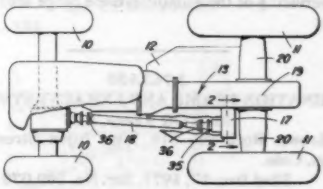
Geoffrey Donald Eggleton, and Eric Douglas Jones, both of Hampshire, England, assignors to County Commercial Cars Limited, Hampshire, England

Filed Nov. 19, 1971, Ser. No. 200,378

Claims priority, application Great Britain, Feb. 26, 1971, 5,571/71

Int. Cl. B60k *17/34*

U.S. Cl. 180—44 R **7 Claims**



A four wheel drive tractor has two steerable wheels and two non-steerable wheels; a footplate; a change speed gear unit arranged in a casing the unit having an upper drive shaft for transmission of torque to the non-steerable wheels; a spur gear rotatable with the said shaft and slidable therealong to engage other gears in the gear unit; an aperture in the gear unit casing adjacent the said spur gear; a housing mounted on the said casing, surrounding the said aperture and extending outwardly and downwardly of the casing to a point below the level of the footplate; a gear wheel mounted within said casing and engaging said spur gear, said gear wheel being of such a width that it is permanently in mesh with the said spur gear during sliding movement of said spur gear along said drive shaft; further gear wheels within the casing forming with said gear wheel a compound gear train extending downwardly below the level of the

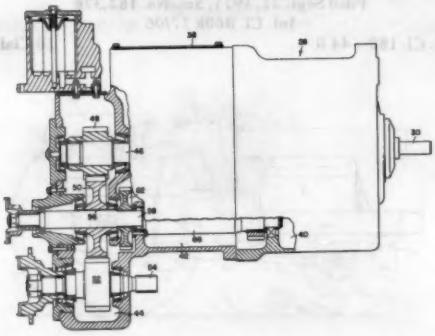
footplate; and means for transmitting torque from the lower end of the gear train to said two steerable wheels.

3,763,949

ARTICULATED VEHICLE TRANSMISSION ASSEMBLY

Thomas William Freiburger, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sept. 11, 1972, Ser. No. 288,190
Int. Cl. B60k 17/34
U.S. Cl. 180—51 10 Claims



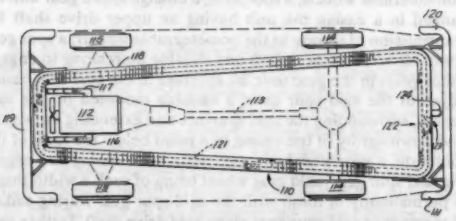
An articulated skidder tractor includes front and rear frame sections respectively on which are mounted a transmission and a logging winch. The transmission includes traction and winch drive shafts which extend through the hinge area of the tractor along axes which intersect the hinge axis and are located along the tractor fore-and-aft centerline. The traction wheel drive shaft is driven through a gear train including an idler gear which is meshed with a driven gear fixed to the traction wheel drive shaft. The winch drive shaft extends axially through and is loosely received within the idler gear. The winch drive shaft is driven through a gear train including a countershaft having a pinion gear fixed thereto and meshed with a driven gear carried by the winch drive shaft. A pump is located within the transmission housing and includes a drive shaft which carries a gear that is also meshed with the pinion gear carried by the drive shaft. The pump housing has one end which extends through and is fixed by exteriorly located screws to the rear end of the transmission housing thus permitting servicing of the pump from the hinge area of the tractor.

3,763,950

COMBINATION FRAME AND EXHAUST SYSTEM FOR MOTOR VEHICLES

Harry Brown Rockwell, 516 West Bijou Street, Colorado Springs, Colo.

Filed Dec. 17, 1971, Ser. No. 209,070
Int. Cl. B60k 13/06
U.S. Cl. 180—64 A 5 Claims



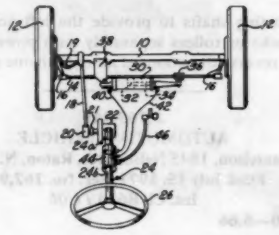
A combination frame and exhaust system for motor vehicles in which the exhaust gases are led through a conduit formed as part of the frame with a relatively long distance to cool the exhaust gases and silence the noise of the motor. The conduit extends several times around the loop of the frame in order to provide sufficient length to produce the required cooling and silencing. Both water and oil may be introduced into the conduit to assist in eliminating pollutants from the system.

3,763,951

VEHICLE POWER STEERING SYSTEM

John J. Kristof, and Geza A. Thiry, both of Marion, Ohio, assignors to Sycon Corporation, Marion, Ohio

Filed June 7, 1971, Ser. No. 150,433
Int. Cl. B62d 5/08
U.S. Cl. 180—79.2 R 11 Claims



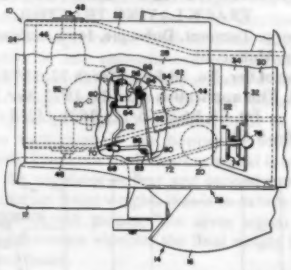
A fluid operated power assisted steering system in which a control valve is positioned in the steering column with the valve including a mechanism for converting rotary movement of the column to axial shifting movement of a valve member which selectively interconnects a source of fluid pressure to opposite ends of a power cylinder connected to the steering mechanism. The valve is self-centering to facilitate wheel return upon completion of a turn.

3,763,952

TRANSMISSION CONTROL MECHANISM

Leon Paul Erdman, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Oct. 4, 1971, Ser. No. 186,011
Int. Cl. B60k 17/08, 19/00
U.S. Cl. 180—65 R 6 Claims



A riding mower has a pair of rear drive wheels with a combination transmission and drive axle disposed between the drive wheels. The main frame includes a rear hooded compartment immediately over the transmission, and a number of batteries and an electric drive motor in the compartment. The motor is connected to the transmission by means of a belt drive, and the transmission is controlled by a relatively short shift arm extending upwardly and forwardly from the transmission. The transmission control lever extends upwardly and forwardly along one side of the compartment to clear the electric drive components and has its forward end in a shift quadrant at the forward end of the compartment, the rearward end of the control lever being connected to the shift arm by a

laterally extending connecting mechanism, which shifts the shift arm in the same pattern as the forward end of the control lever.

3,763,953

ENGINE COOLING DEVICE OF AN AMPHIBIAN SERVICE CAR

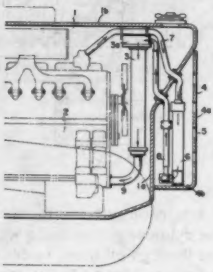
Tadashi Yoda, Neyagawa; Kiichi Muraki, and Masatoshi Kishitani, both of Hirakata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 196,148

Claims priority, application Japan, Nov. 6, 1970, 45/97210; Nov. 6, 1970, 45/97211

Int. Cl. B60k *11/00*

U.S. Cl. 180—68 R **3 Claims**



An engine cooling device of an amphibian service car which has a cooler provided outside of the engine room in a sealed structure containing an engine and a radiator, a hatch provided at the engine room, a conduit connected from the water manifold of the engine to the high temperature side of the cooler, anotherconduit connected from the low temperature side of the cooler to the high temperature side of the radiator, and another conduit connected from the low temperature side of the radiator to the water jacket of the engine. Thus, the engine of the service car is cooled by the radiator on land and by the cooler underwater, without fail.

3,763,954

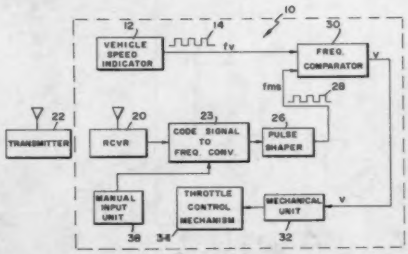
VEHICLE SPEED AND CRUISE CONTROL SYSTEM

Albert A. Permut; Ronald M. Permut, both of 11718 Greenland Dr., Potomac, Md., and Alan R. Permut, 1065 University Ave., Boulder, Colo.

Filed May 13, 1971, Ser. No. 143,079

Int. Cl. B60k *31/00*

U.S. Cl. 180—98 **17 Claims**



A vehicle speed control system is disclosed in which a first train of pulses, at a frequency directly related to actual vehicle speed, is generated. Also generated is a second train of pulses at a frequency which is directly related to maximum vehicle speed. The frequency of the second pulse train is controlled either manually or by the code of any one of a plurality of coded signals received by the system's receiver from a low power transmitter. When the frequency of the first train exceeds that of the second train, a restraining force is generated which is applied to the vehicle's throttle mechanism in opposition to the force or pressure applied by the operator's foot.

3,763,955

ARRANGEMENT FOR CONTROLLING THE STEERING OF VEHICLES DIRECTED ALONG A PREDETERMINED PATH

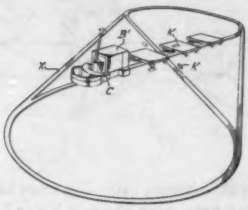
Karl-Heinz Schroder, Gummersbach, and Wolfgang Zwicker, Olpe, both of Germany, assignors to Pulsotronic Merten KG, Gummersbach, Germany

Filed Dec. 2, 1971, Ser. No. 204,274

Claims priority, application Germany, Dec. 4, 1970, P 20 59 659.2

Int. Cl. B60k *27/06*

U.S. Cl. 180—98 **24 Claims**



An arrangement for controlling unmanned vehicles to drive along a predetermined path on which a guide track is laid. The guide track has a border of electrically conductive and nonconductive material. The vehicle carries analog signal generators which emanate a magnetic field that is damped by the electrically conductive material. The signal generators provide positive or negative signals depending on the displacement of the projected border relative to the centerline of the active zone of the signal generators. The generators provide a zero signal when the projected border coincides with the centerline of the active zone.

3,763,956

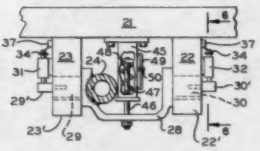
UPSET-PREVENTING DEVICES FOR TRACTORS

Herbert L. Ruff, 2058 Genesee St., Utica, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,599

Int. Cl. B60k *23/00*

U.S. Cl. 180—104 **2 Claims**



A tractor is given some vertical play between the front wheel supported carriage and the tractor frame. One or more downwardly spring-biased rods recipocatingly supported by the frame each have its lower end in contact with a portion of the carriage and its upper end operatively supporting the operating lever of a normally open switch to hold the switch closed. The switch is connected between the tractor battery and the engine coil so as to cut off ignition to the engine when the front end of the tractor is raised enough to drop the carriage downward with respect thereto. A dashpot device is arranged between the carriage and the frame to prevent cutting off the ignition by quick downward movement of the carriage-operated rod with respect to the frame-carried switch caused by passage over rough ground. A mercury switch has its con-

tacts arranged to complete a shutoff circuit when the tractor is tipped to a critical angle sidewise. The cutoff circuit includes a solenoid operated switch to cut the engine ignition circuit and two other solenoids arranged to initiate the transverse swinging out of a tip-over preventing arm at each side of the tractor.

3,763,957

GAS-CUSHION VEHICLE

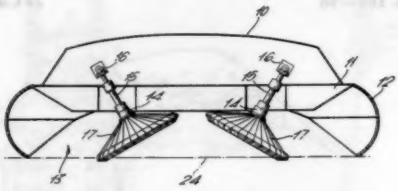
Rowland Delville Hunt, Fareham, England, assignor to Vosper Thornycroft Limited

Filed July 22, 1971, Ser. No. 165,128

Claims priority, application Great Britain, July 28, 1970, 36,436/70

Int. Cl. B60v *3/00*

U.S. Cl. 180—119 7 Claims



A gas-cushion vehicle having propulsion mechanism in the form of power driven hubs, each of which has radially extending members whose free ends successively drivably engage the surface over which the vehicle is travelling as said hub is rotated, said members being adapted to be deflected by the surface and/or irregularities in the surface.

3,763,958

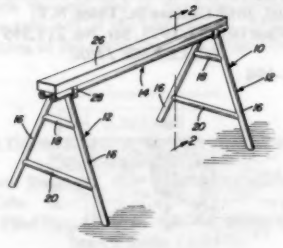
COLLAPSIBLE SAWHORSE

Clifford C. Hanson, 100 S. Pebble, Fremont, Nebr.

Filed Mar. 9, 1972, Ser. No. 233,112

Int. Cl. F16m *11/00*

U.S. Cl. 182—181 5 Claims



A pair of planar upstanding end members interconnected at their upper ends by means of a pair of generally parallel longitudinal members each individually secured between the end members or sections with the latter defining depending legs for supporting the longitudinal members extending therebetween in elevated position above a support surface upon which the end sections have their lower ends supported. An elongated top board overlies the spaced parallel longitudinal members connecting the end section and includes opposite end downwardly opening clips releasably frictionally engaged with the corresponding end portions of the longitudinal members for support of the top board in position overlying the longitudinal members and against accidental displacement relative thereto.

3,763,959

HYDROSTATIC LUBRICATING DEVICE FOR THE MESHING POINTS OF CYLINDER WORMS AND A WORM RACK

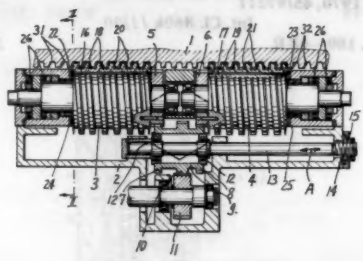
Heinz Neugebauer, Weidach near Coburg, Germany, assignor to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Hahnweg, Germany

Filed Dec. 20, 1971, Ser. No. 209,679

Claims priority, application Germany, Dec. 23, 1970, P 20 63 344.7

Int. Cl. F16h *1/20*

U.S. Cl. 184—6.12 6 Claims



A hydrostatic lubricating device for the points of engagement between the cylinder worms and a worm rack. Lubricating oil is supplied through oil bores under pressure by means of a distributor device. The oil bores are either distributed uniformly on the periphery of the tooth flanks of the worms or provided in the tooth flanks of the rack so that only the meshing points of the tooth flanks are supplied with lubricating oil.

3,763,960

LUBRICATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

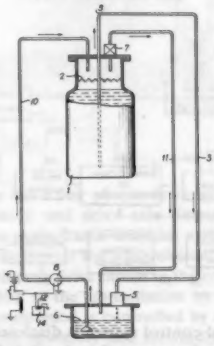
Veit John, Frankfurt (Main) Wiesbaden, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 806,050, March 11, 1969, Pat. No. 3,606,935. This application Apr. 5, 1971, Ser. No. 131,358. The portion of the term of this patent subsequent to Sept. 21, 1988, has been disclaimed.

Claims priority, application Germany, Mar. 16, 1968, P 16 01 980.0

Int. Cl. F16n *39/06*

U.S. Cl. 184—6.13 5 Claims



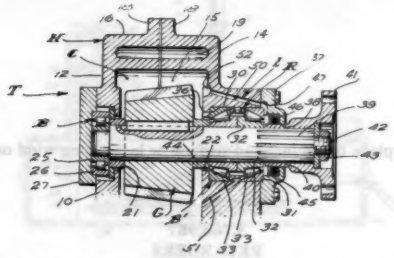
A lubricating system for internal combustion engines, particularly for automobile engines, has a removably mounted reservoir for lubricating fluid, a dry sump, and an electric pump which draws lubricating fluid and air from the dry sump to the reservoir immediately prior to the first turn of the en-

gine and maintains the air and lubricating fluid in the reservoir under pressure from immediately prior to the first turn of the engine and during the operation thereof to supply lubricating fluid to the lubricating points in the engine.

3,763,961
V-DRIVE TRANSMISSION UTILIZING SPLASH LUBRICATION

Ernest Casale, c/o Casale Engineering, 161 8th Ave., City of Industry, Calif.

Filed June 29, 1972, Ser. No. 267,638
Int. Cl. F16n 7/26
U.S. Cl. 184—11 A **10 Claims**

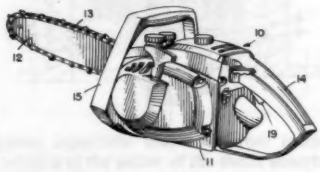


A transmission with a housing defining a chamber with an oil sump, a shaft in the chamber above the sump, bearing means in an opening in the housing through which the shaft projects and rotatably supporting the shaft; the bearing means includes axially aligned inner and outer annular roller bearing assemblies each with primary and secondary ends, inner and outer race rings, and an annular series of rollers between the races on axes diverging axially and radially outwardly toward said secondary end of the assembly; the assemblies are arranged with their secondary ends in opposed relationship with their outer races engaged about the shaft, means to splash oil from the sump throughout the chamber, the inner bearing assembly communicates with the chamber, and lubricating means comprising an oil receiving recess at the bottom of the socket communicating with the outer bearing assembly, an oil inlet duct with an outlet end communicating with the recess and an inlet end communicating with the chamber and an elongate oil outlet duct with an inlet end communicating with the socket between the assemblies and an outlet end communicating with the chamber, the inner races and rollers inducing the flow of oil axially and radially outwardly between the races when rotated whereby oil splashed in the chamber is caused to flow through the inlet duct to the recess, through the assemblies and the outlet duct and back into the chamber.

3,763,962
OILER APPARATUS FOR POWER TOOLS

Alfred Gottlieb, Crete, Ill., assignor to DESA Industries, Inc., Cockeysville, Md.

Filed Apr. 11, 1972, Ser. No. 242,981
Int. Cl. F16n 7/14
U.S. Cl. 184—15 A **7 Claims**

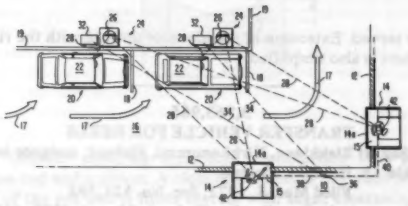


An oiler apparatus for power tools automatically supplies oil to the moving parts of the tool when the tool is actuated and may be manually operated to supply oil when desired. The oiler apparatus includes a plunger reciprocably mounted within a casing having inlet and outlet means for supplying oil to the casing and for conducting oil from the casing to the parts to be oiled. Linkage means extends from the plunger to adjacent the throttle trigger or other actuating means for operating the tool. The linkage means is engaged by the trigger when the trigger is pulled to operate the tool whereby the linkage and the plunger are moved to pump oil through the outlet means of the casing. A manual actuator which is also engageable with the linkage means is mounted adjacent the trigger, and the linkage and the plunger can be moved by the manual actuator independently of the trigger.

3,763,963
METHOD AND APPARATUS FOR INDIRECT VISUAL COMMUNICATION

Walter Wisznia, 712 Buffalo, Corpus Christi, Tex.

Filed Feb. 8, 1972, Ser. No. 224,460
Int. Cl. E04h 3/04
U.S. Cl. 186—1 R **4 Claims**



A method and apparatus for establishing indirect visual communication between one or more vehicle stations, positioned adjacent a drive-in bank having one or more receiving or teller stations fashioned in the exterior walls thereof. A specular or reflective unit is fixedly positioned adjacent each vehicle station. Each specular unit has connected thereto a remotely controllable adjustable specular member capable of being adjusted to reflect a line of sight between the adjacent vehicle station and any one of the drive-in bank receiving stations. Further, a pneumatic conveyor unit is positioned adjacent each specular unit to transfer physical items between the vehicle station and any one of the bank receiving stations.

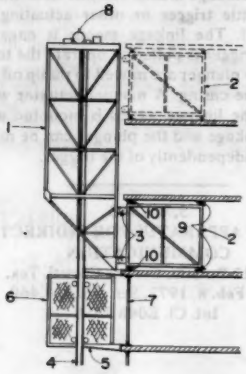
3,763,964
OUTSIDE ELEVATOR

Robert J. Davis, Honolulu, Hawaii, assignor to Equipment Systems, Inc., Honolulu, Hawaii

Continuation-in-part of Ser. No. 02,094, Jan. 12, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,803
Int. Cl. B66b 9/00
U.S. Cl. 187—2 **8 Claims**

An outside elevator used for the purpose of hauling men and materials in and out of a multi-story building during construction or other periods depends solely for the support of its own weight and the payload upon attachments to temporary support frames wedged between floor and ceiling of one story of the building. The elevator supports a power hoist mechanism on the top of an open structure two or more stories in height which is raised into place alongside these temporary support frames on elevator guide rails spaced from the building wall by support brackets at each floor. When this hoist supporting structure is fastened to the building through the support frames, the hoist can then raise and lower the payload on a cage also riding on the guide rails up into the open structure to serve not only the lower stories of the building but those adjacent to the open structure itself. With this

elevator in use on a building under construction, not only is the usual four-legged tower obviated, but added stories are



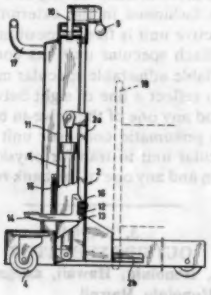
easily served. Extension of the elevator upward with the rising structure is also simplified.

3,763,965

TRANSFER VEHICLE FOR REELS

Asko Sakari Riekkinen, Kirkkonummi, Finland, assignor to Oy Nokia Ab, Helsinki, Finland

Filed Mar. 5, 1971, Ser. No. 121,394
Claims priority, application Finland, Mar. 6, 1970, 618/70
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **3 Claims**



A transfer vehicle for transferring reels to and from a winding machine. The vehicle is provided with a vertically movable lift-fork and a hydraulic cylinder moving said lift-fork. The hydraulic cylinder is connected to a pressure accumulator which stores the energy of a full reel moving the lift-fork downwards and causes the lift-fork supporting an empty reel to move upwards due to the stored energy.

3,763,966

PARKING BRAKE FOR A CART OR THE LIKE

James Garth Close, 3215 29th St., P.O. Box 3096, Lubbock, Tex.

Filed Feb. 25, 1972, Ser. No. 229,302
Int. Cl. B60t *1/14*
U.S. Cl. 188—5 **5 Claims**

A manually operable ground engaging brake for use on wheeled vehicles such as merchandise carts, baby carriages, wheel chairs, or the like, which can be selectively engaged by the operator to park or anchor the cart as desired to hold the

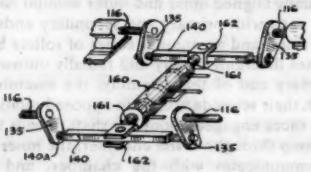
cart in place on an inclined surface or in a strong wind or the like.

3,763,967

RETARDERS

Rosser L. Wilson, Mahwah, N.J., and Earl E. Frank, Tallman, N.Y., assignors to Abex Corporation, New York, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,419
Int. Cl. B61k *7/02*
U.S. Cl. 188—62 **10 Claims**



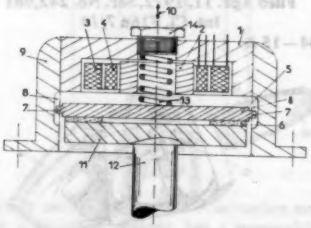
A railroad car retarder, adapted for installation in a classification yard or the like, and of the weight-compensating type, is so constructed as to reduce substantially the hydraulic requirements used for positioning the retarder. This is accomplished by operating four rock shafts simultaneously from a single source of power.

3,763,968

ELECTRO-MAGNETIC BRAKING DEVICE

Jean Noly, Villa Le Tasco 1, Quartier Briand, La Clayette, France

Filed Mar. 6, 1972, Ser. No. 233,053
Claims priority, application France, Mar. 9, 1971, 7109021
Int. Cl. B60t *13/04*
U.S. Cl. 188—171 **6 Claims**



The electro-magnetic braking device includes two coils concentrically disposed about a magnetizable core having a high residual magnetism capable of holding a brake armature in

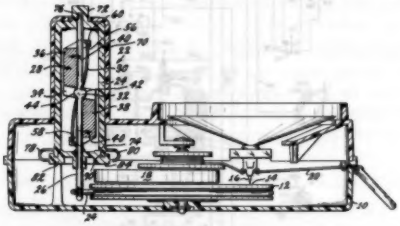
non-braking position against a spring bias even when the current is removed form the coils. When it is desired to have the brake armature spring biased into braking position when the current is removed from the coils a demagnetization circuit is connected to one of said coils to demagnetize the core.

3,763,969

SIMPLIFIED GOVERNOR

William F. Summerfield, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed July 24, 1972, Ser. No. 274,774
Int. Cl. F16d 59/00
U.S. Cl. 188—184 8 Claims



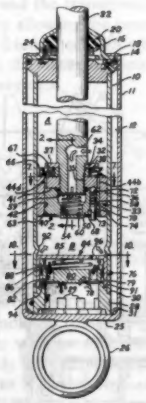
A governor which includes a shaft having an enlargement and which is rotatably mounted in a housing, a weight pivotally mounted on the shaft enlargement so the ends of the weight can move out and against the housing to slow the shaft, and a leaft spring which biases the weight inwardly and which engages flat surfaces of the shaft enlargement to transmit torque between the shaft and weight. The housing is a single piece injection molded part with a cup-shaped body which carries a pair of straps near its open end, and with bearing members at the ends of the straps. The bearing members, which have bearing recesses, can be mounted on the open end of the housing with the recesses forming a shaft bearing.

3,763,970

ADJUSTABLE SHOCK ABSORBER

Richard D. Anderson, 866 S. Charles St., Elgin, Ill.

Filed June 29, 1970, Ser. No. 50,591
Int. Cl. F16f 9/44
U.S. Cl. 188—282 14 Claims



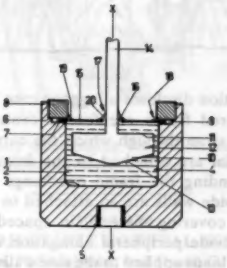
A response adjustable shock absorber includes a valve movable relative to the piston of the shock absorber, the valve and piston having passages therein which are selectively alignable with each other so as to control the rate of transfer of fluid from one side of the piston to the other both during the compression and extension strokes of the piston. Also a bleed orifice is provided between the working cylinder of the shock absorber and a reservoir which may be selectively opened or closed to further control the response of the shock absorber at various speeds.

3,763,971

TILTPROOF DAMPING APPARATUS

Kaspar Saner, Dubendorf, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

Filed May 9, 1972, Ser. No. 251,841
Claims priority, application Switzerland, June 9, 1971, 8583/71
Int. Cl. F16f 9/36
U.S. Cl. 188—322 5 Claims



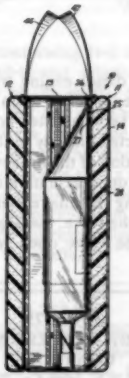
A tiltproof damping apparatus is comprised of a pot, a piston rod and a piston. A closure member is provided for one end of the pot and is fitted therein with slight clearance. The piston rod extends through an aperture in the closure member with limited clearance therebetween. Liquid means is received within the pot and a meniscus of the liquid means is formed on the outside of the closure member about each clearance.

3,763,972

STADIUM SEAT AND BOTTLE CARRIER

Martin Karzmar, Millburn, N.J.

Filed Apr. 26, 1972, Ser. No. 247,779
Int. Cl. A45c 9/00
U.S. Cl. 190—8 3 Claims



A combined stadium seat and carrier for bottled beverages including two half shell sections hinged together, whereby the sections may be fastened in envelope defining configuration or, alternatively, in the unhinged condition, form a stadium seat. A beverage carrier is mounted between the shells which are provided with padding, the padding functioning, in the envelope defining position, as shock insulator for the beverage

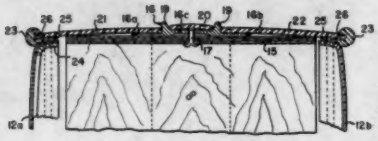
containers, and in the open position as a pair of cushions for covering adjacent seats or the back and cushion of a single seat.

3,763,973

LUGGAGE CASE

Ronald C. Taylor, Brighton, Pa., assignor to Airway Industries, Inc., Pittsburgh, Pa.

Filed Apr. 6, 1972, Ser. No. 241,558
Int. Cl. A45c 3/00
U.S. Cl. 190—49 10 Claims



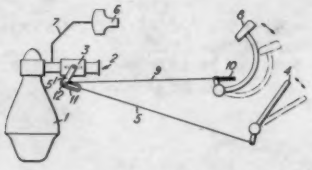
The specification discloses a luggage case having a molded multi-ply veneered frame reenforced centrally with a surrounding metal strap through which the carrying handle and covering material are attached to the frame. The covering material surrounding the frame overhangs the sides of the frame and the side walls are so attached to the overhanging portion of the covering material in spaced relation to the frame as to provide peripheral elongation of the side walls when subject to loads applied to the side walls.

3,763,974

MANIFOLD VACUUM CONTROL FOR POWER BRAKES

Eric R. Neal, Coventry, England, assignor to Conventry Climax Engines Limited, Warwickshire, England

Filed May 8, 1972, Ser. No. 251,387
Int. Cl. B60k 29/00
U.S. Cl. 192—3 R 1 Claim



A vehicle having a diesel engine with a fuel supply controlled other than in dependence upon the pressure in the air intake manifold, and a servo assisted braking system the servo unit of which is connected directly to the intake manifold and is activated for application of the brakes by pressure reduction in the intake manifold upon actuation of a choke valve which throttles the air entering the intake manifold. Depression of a brake pedal will close the valve, the depression of an accelerator pedal will force the valve open regardless of the brake pedal position.

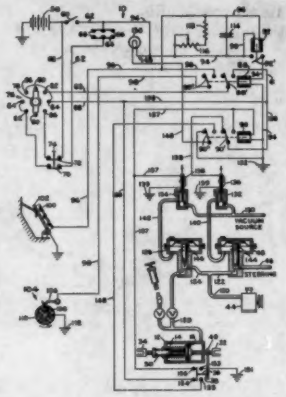
3,763,975

BRAKE WITH VEHICLE SPEED & ACCELERATOR CONTROLS

John G. Fontaine, 2817 N.E. 26th Ct., Fort Lauderdale, Fla.

Filed June 12, 1972, Ser. No. 261,968
Int. Cl. B60k 29/00
U.S. Cl. 192—3 TR 18 Claims

Automatic braking apparatus for a vehicle including a spring opposed by a fluid pressure system whereby the spring applies the brakes only when the pressure of the fluid falls below a predetermined level, and an adjusting device for setting and limiting the force of the spring so that the braking force will always be the same in any operating conditions. A control system causes release of the fluid pressure upon the occurrence of a predetermined condition or more than one condition. The spring then applies the brakes. The control system may include a speed responsive device which causes release of the fluid pressure when the vehilce stops, and the control system is so arranged that the speed responsive device cannot again cause release of the brakes. The apparatus is



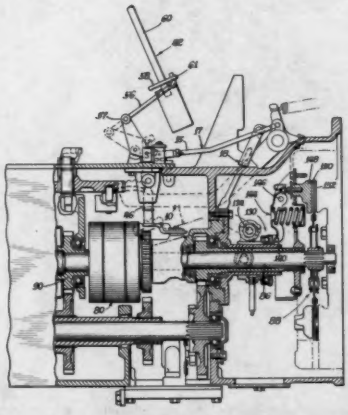
capable of operation in different modes, and a selector device is employed to select a particular mode. One of the modes which can be selected by this device is effective to release the brakes without any other conditions occurring so that the vehicle can be worked on or hauled through a wash rack or towed, by way of example. A signal-ling device is employed to provide a warning in case of loss of fluid pressure due to failure.

3,763,976

CLUTCH CONTROLLED TRANSMISSION SHIFT LOCK

Josef F. Prokop, Addison, and Irvin A. Eickmeyer, La Grange, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 27, 1972, Ser. No. 221,341
Int. Cl. B60k 21/00
U.S. Cl. 192—3.63 6 Claims



An assembly having a dual hydraulic clutch, a master clutch and a coordination means linked therebetween. The coordination means preventing engagement of the hydraulic clutch

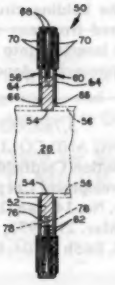
until the master clutch is disengaged and includes a clutch pedal actuated gate means which alternately bars or allows movement of the hydraulic spool that directs high pressure fluid to the hydraulic clutch. A manual operable lever means is employed to effect movement in the spool.

3,763,977

BRAKE WITH TORQUE LIMITING COUPLING

William Howard Sink, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Sept. 13, 1972, Ser. No. 288,854
Int. Cl. F16d *67/02*
U.S. Cl. 192—7 10 Claims



A clutch brake assembly is provided for use with heavy-duty non-synchronized transmission having a limited torque feature incorporated therein. This feature is accomplished by resilient means in the form of a pair of pre-loaded Belleville washers located intermediate an outer friction section and an inner brake section. The inner brake section has tangs for drivingly engaging splines of keyways on the transmission driven shaft and also has a lost motion coupling connection with the Belleville washers. The Belleville washers in turn have a controlled frictional driving engagement with the outer friction section. With this arrangement, the Belleville washers function to positively control the torque applied to the inner brake section so that the tang and spline connection between the inner brake member and the transmission driven shaft is protected from damage by allowing the inner brake section to slip relative to the outer friction section when excessive braking pressure is applied to the outer friction section of the clutch brake by a vehicle operator.

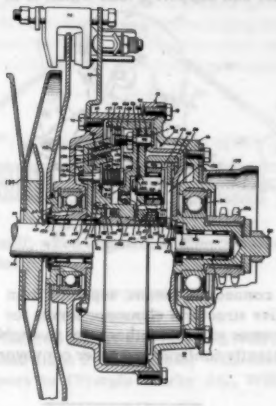
3,763,978

TWO SPEED TRANSMISSION WITH BRAKE

James W. Crooks, 4973 N. Larkin St., Whitefish Bay, Wis.

Filed Oct. 14, 1971, Ser. No. 189,380
Int. Cl. F16h *57/10*
U.S. Cl. 192—4 A 25 Claims

The invention is a two speed transmission including first and second shafts independently rotatably journaled in a housing and coupled together with an epicyclic gear assembly. The epicyclic gear assembly includes a ring gear and a sun gear one of which is coupled to a predetermined one of the first and second shafts and at least one pinion gear coupled to the other of the shafts for rotation therewith. Brake means are coupled to the other of the ring and sun gears for selectively locking and unlocking same against rotation, and self-actuating clutch means are provided for coupling the aforementioned other gear to the pinion gear. The clutch means includes spring means for forcibly engaging the clutch when the aforementioned other gear is unlocked and a helical spline means for



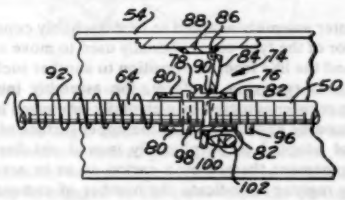
forcibly frictionally disengaging the clutch means in response to locking the aforementioned other gear.

3,763,979

ADJUSTABLE HOSPITAL BEDS

Robert Goodman, Philadelphia, and David G. Kilpatrick, Bala Cynwyd, both of Pa., assignors to Goodman Bros. Mfg. Co., Philadelphia, Pa.

Division of Ser. No. 889,545, Dec. 31, 1969, Pat. No. 3,598,148. This application Sept. 14, 1971, Ser. No. 180,348
Int. Cl. F16d *19/00*
U.S. Cl. 192—89 A 2 Claims



A coupling means comprising two releasably connectable rotatable shafts in end-to-end relationship, a sleeve overlapping adjacent ends of the shafts, the sleeve having one closed slot at one end and one open-ended slot at the other end, a pin on each shaft, the pin on one shaft being engaged in the closed slot and the pin on the other shaft being movable into and out of the open-ended slot, a spring biasing the corresponding pin into the open-ended slot to couple the shafts together, and selectively operable cam means for moving the sleeve to disengage the corresponding pin from the open-ended slot to uncouple the shafts.

3,763,980

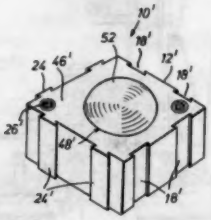
ASSEMBLY SET FOR ERECTING ROLLER CONVEYORS

Hans Vom Stein, and Dieter Specht, both of Wermelskirchen, Germany, assignors to Hans Von Stein O.H.G., Dhunn-Rhld., Germany

Filed Nov. 14, 1969, Ser. No. 876,671
Claims priority, application Germany, June 30, 1969, P 19 33 067.7
Int. Cl. B65g *13/11*
U.S. Cl. 193—35 R 22 Claims

An assembly set for erecting roller conveyors includes a plurality of structural elements each of which has a housing pro-

vided in its upper side with a recess in which a spherical or cylindrical rolling element is turnably accommodated with a portion thereof projecting upwardly beyond the upper side so as to contact and support a load which is to be transported.



Releasable connecting means, separate from or provided on the respective structural elements, serves for releasably connecting the same to one another so as to enable the construction of differently configurated roller conveyors at the will of a user.

3,763,981

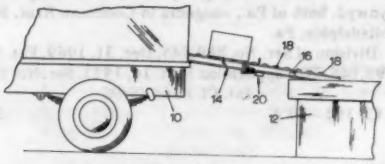
COUNTER ASSEMBLY FOR CONVEYOR

Harvey A. Campbell, R.D.9, York, Pa.

Filed Mar. 6, 1972, Ser. No. 231,809

Int. Cl. B65g *13/00*

U.S. Cl. 193—35 R **2 Claims**



A counter assembly adapted to be detachably connected to a conveyor of the type conventionally used to move a series of cartons and the like from one position to another such as from a truck to a receiving platform, the assembly including a recording register actuated by a pivotally supported lever normally extending upwardly above the upper surface of the conveyor and adapted to be pivotally moved uni-directionally upon engagement thereof by a carton so as to actuate said recording register to indicate the number of cartons moving along said conveyor to provide an accurate count of cartons being unloaded from a truck or the like. Safety means are included to prevent any over-travel of the actuating lever being harmful to the recording register.

3,763,982

ELECTRICAL CONTROL SYSTEM IN A COIN-OPERATED VENDING APPARATUS, AND A PRODUCT VEND CHANNEL DEVICE FOR SUCH APPARATUS

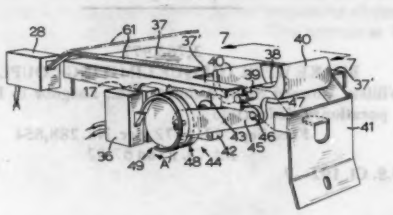
John Wilson Glen, Deseronto, Ontario, Canada, assignor to Eddy Match Company Limited, East Toronto, Ontario, Canada

Filed Apr. 11, 1972, Ser. No. 242,943

Int. Cl. G07f *5/10*

U.S. Cl. 194—9 **16 Claims**

An electrical control system is provided in a coin-operated vending apparatus having a plurality of product vend channels, the system including a coin-operated energizing circuit which incorporates a relay, and a holding circuit for the relay. The holding circuit includes, for each of the product vend channels, first and second switches with the first switch having a first position in which it completes the holding circuit in bypassing relationship to the second switch and a second position in which, after breaking of the holding circuit and deenergization of the relay, it re-completes the holding circuit through the second switch when the second switch is closed. The first and second switches are cam-operated by the respective product vend motor, the re-completion of the holding circuit when the first switch is in the second position and the second switch is closed permitting, if a malfunction occurs during a product vending cycle in the respective product vend channel and while the holding circuit is so re-completed, a product to be obtained from any of the remaining product vend channels on the insertion into the apparatus of a further coin or coins of the appropriate denomination.



3,763,983

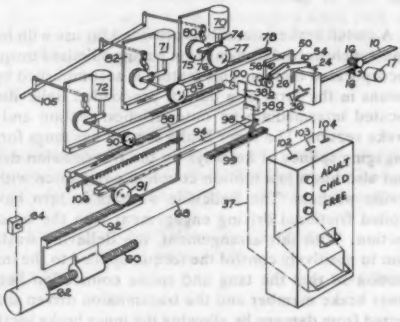
TICKET ISSUING AND COLLECTION SYSTEMS

Alec Patrick James, Sutton Coldfield, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 14, Jan. 2, 1970, abandoned. This application Mar. 21, 1972, Ser. No. 236,582

Int. Cl. B65h *17/04*; G07f *11/66*

U.S. Cl. 194—10 **14 Claims**



A ticket system for public transport vehicles based on the use of tickets which require to be of a predetermined length when presented for checking as the passenger leaves the vehicle, this length being determined on issue of the ticket by mechanism which allows for the issue point in relation to the complete journey and also in accordance with the fare paid: thus all tickets checked at any particular point should be of the same length irrespective of their several issue points, and any short ticket indicates short payment.

3,763,984

IMPROVED COIN SLIDE ASSEMBLY

Harry Greenwald, Whitestone, and Christos Lambiris, Bronx, both of N.Y., assignors to Walter Kidde & Company, Inc., Clifton, N.J.

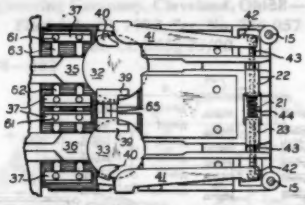
Filed Feb. 14, 1972, Ser. No. 226,178

Int. Cl. G07f *5/14*

U.S. Cl. 194—92 **9 Claims**

A coin slide assembly in which an upper assembly and a lower assembly releasably connected together define a guide passage for the movement of a coin slide, and the movement of the coin slide, without the proper coin combination in-

serted, beyond a limit is prevented by a blocking means that inserts an obstruction into the guide passage. The blocking means is responsive to the presence of the proper coin com-



bination inserted in the coin slide to remove the obstruction from the guide passage and thereby allow movement of the coin slide beyond such limit to a position for activating the coin-controlled device.

3,763,985

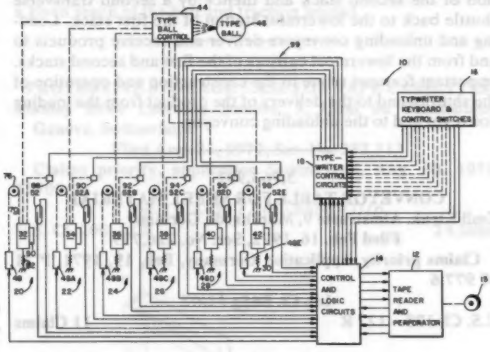
REVISION TYPEWRITER SYSTEM

Albert B. Strauss, Ridgewood, and William H. Mutter, Chatham, both of N.J., assignors to QuinData, Inc., Springfield, N.J.

Filed Aug. 3, 1970, Ser. No. 60,291

Int. Cl. B41j *5/36*

U.S. Cl. 197—20 **4 Claims**



A tape reader and perforator electrically communicate with an electric typewriter through control and logic circuits. A plurality of magnetic actuators are provided for transferring typewriter data to the tape reader and perforator and for transferring tape data to the typewriter. Each magnetic actuator includes a magnet mounted to selected typewriter control members and a plurality of reed switches connected to the control and logic circuits. When the control member is activated by either depression of a typewriter key or actuation of a triggering device, the magnet associated therewith is moved in proximity to a selected reed switch whereby the reed switch is energized. The control and logic circuits include a memory responsive to a correction code signal for storing data representing the number of character spaces to be corrected and for selectively advancing a paper tape a distance specified by the data stored in the memory.

3,763,986

DATA RECORDING

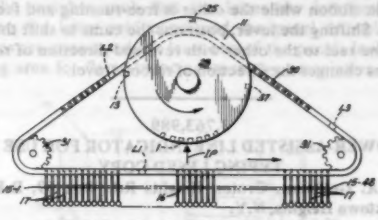
Fritz A. Deutsch, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Aug. 17, 1971, Ser. No. 172,410

Int. Cl. B41j *1/22*

U.S. Cl. 197—6.2 **2 Claims**

Characters presented by a rotary head of a data recording machine (e.g. an embossing machine) are sequentially located at an index position accordingly as related selectors are moved to a set or actuated position to arrest motion of an indexing



clutch which itself, when arrested, is effective to stop the rotary head at index position.

3,763,987

LINE SPACING DEVICE FOR TYPEWRITERS

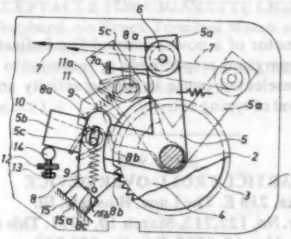
Detlef Kunst, and Hans Fuchs, both of Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany

Filed Dec. 20, 1971, Ser. No. 210,012

Claims priority, application Germany, Dec. 22, 1970, P 20 63 062.0

Int. Cl. B41j *19/76*

U.S. Cl. 197—114 **10 Claims**



A carrier lever on which a pawl, engaging the line space ratchet of a turnable platen, is movably mounted, is shifted a predetermined angle until blocked by a rigid stop so that the platen is turned to a desired position. Due to inertia, the platen with the ratchet moves beyond the desired position, but an elastic stop is engaged by the pawl when the carrier lever is blocked so that the inertial movement causes deformation of the elastic stop which turns the ratchet and platen by means of the pawl back to the desired position. A spring connecting the pawl with the carrier lever also opposes the inertia movement.

3,763,988

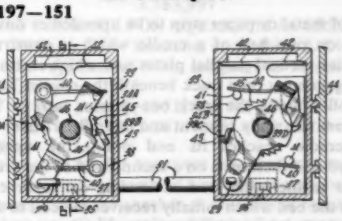
CARTRIDGE RIBBON DRIVE MECHANISM

Shigeaki Kuramochi, Tokyo, Japan, assignor to Louis Mark & Co., Inc., New York, N.Y.

Division of Ser. No. 141,861, May 10, 1971, Pat. No. 3,724,632. This application Nov. 22, 1972, Ser. No. 308,903

Int. Cl. B41j *33/14*

U.S. Cl. 197—151 **2 Claims**



The operating characteristics of an inexpensive typewriter intended primarily for juvenile use are improved with respect

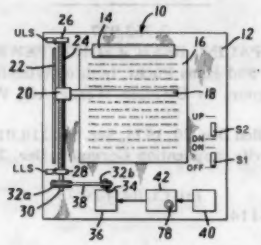
to the ribbon drive and reversal of ribbon drive direction and with respect to the carriage escapement. A single lever positions two cams so that one reel is driven by key action and draws in ribbon while the other is free-running and feeds out ribbon. Shifting the lever, positions the cams to shift the drive from one reel to the other with reversed direction of rotation and thus changes the direction of ribbon travel.

3,763,989

POWER-ASSISTED LINE INDICATOR FOR USE IN TYPING LINED COPY

David A. Goldman, Croton Heights Rd., Box 69, R.F.D. 1, Yorktown Heights, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,596
Int. Cl. B41j *11/44*
U.S. Cl. 197—181.2 **21 Claims**



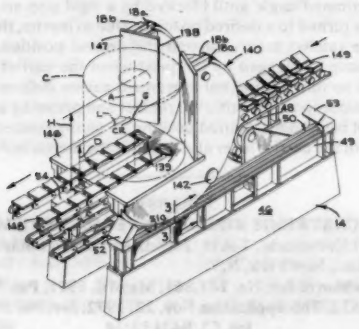
The drive motor of a power-assisted line indicator is energized and deenergized respectively in response to the occurrence of a preselected pause in typing activity and the subsequent renewal of typing activity.

3,763,990

ARTICLE ROLL-OVER DEVICE

Ralph C. Ouska, 218 E. The Lane, Hinsdale, Ill.

Division of Ser. No. 122,713, March 10, 1971. This application May 12, 1972, Ser. No. 252,730
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AD **5 Claims**

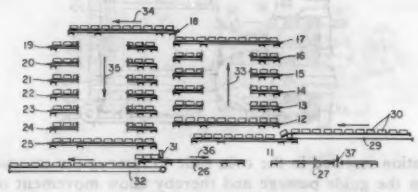


A coil of metal or paper strip to be upended or downended is placed on one bed of a cradle which is constructed of semicircular vertical parallel plates and which is mounted in rolling engagement on a track beneath the cradle. The cradle is then rolled along the track one-quarter turn or 90° by a drive system to axially reorient and laterally transfer the coil. As the cradle reaches its end point, the upended or downended coil then rests on a second bed of the cradle perpendicular to the initial bed. A loading conveyor chain extends into the bed which initially receives the coil to carry the coil to the bed and an unloading conveyor chain extends from the bed onto which the coil is transferred for carrying the coil from the bed.

3,763,991

PRODUCT CONVEYOR SYSTEM

Filed Apr. 27, 1972, Ser. No. 248,313
Int. Cl. B65g *37/00*
U.S. Cl. 198—85 **23 Claims**



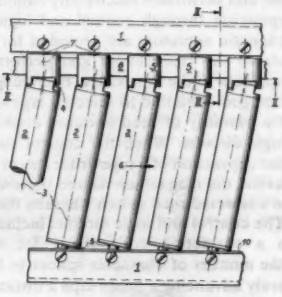
Product conveyor system wherein a plurality of separate product carriers are provided in the form of generally flat rectangular grates. Each carrier is moved by an upward shuttle from a lowermost station of a first stack and thence through a plurality of intermediate stations to an uppermost station of the first stack, thence by a first transverse shuttle to the uppermost station of a second stack, thence by downward shuttle through a plurality of intermediate stations to a lowermost station of the second stack and thence by a second transverse shuttle back to the lowermost station of the first stack. Loading and unloading conveyors deliver and receive products to and from the lowermost carriers of the first and second stacks. Important features relate to the construction and operation of the shuttles and to the delivery of the product from the loading conveyor and to the unloading conveyor.

3,763,992

CONVEYOR TABLE FOR SHEET MATERIAL

Emil Klenk, Almstrasse 9, Murrhardt, Germany

Filed Feb. 16, 1972, Ser. No. 226,779
Claims priority, application Germany, Feb. 19, 1971, P 21 07 977.6
Int. Cl. B65g *13/07*
U.S. Cl. 198—127 R **11 Claims**



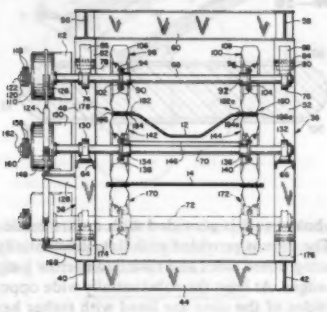
The invention contemplates a conveyor table with a plurality of spaced oblique work-supporting rollers, for guiding and conveying sheet material such as sheet paper while urging the same against a marginal side reference. Drive to these rollers is imparted by a single belt at one marginal side and engaging a corresponding plurality of belt-driven rolls which are oriented to rotate on axes perpendicular to the path of belt movement. Each belt-driven roll has a keyed or universal-joint connection to its corresponding work-supporting roller.

3,763,993

PINCH ROLL DRIVE FOR ENDLESS CONVEYOR BELT

Richard E. Whikehart, Pepper Pike, and Rudolph R. Patrick, North Olmsted, both of Ohio, assignors to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed July 28, 1972, Ser. No. 276,057
Int. Cl. B65g *23/00*
U.S. Cl. 198—203 10 Claims



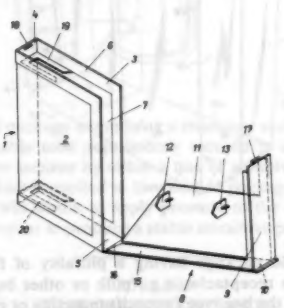
There is provided a pinch roll drive for long distance conveyor belts. These drives are located at intervals along the belt and depend upon driving wheels frictionally engaging marginal drive edges of an endless conveyor belt. Pairs of wheels which may be separately driven are disposed above and below a given reach of the belt and traction loaded.

3,763,994

PROTECTIVE STORAGE CASE FOR TAPE CASSETTES

Stanley Brice Lascelles Somers, 5, Quai du Mont-Blanc, Geneva, Switzerland

Filed Aug. 21, 1972, Ser. No. 282,113
Claims priority, application Switzerland, Aug. 30, 1971, 12709/71
Int. Cl. A45c *11/00*; B65d *43/16*
U.S. Cl. 206—1 R 2 Claims



A protective storage case for tape cassettes includes a rectangular parallelepipedic box with two perpendicular open edge faces adapted to be opened or closed by a pivoting flap member including means for supporting a cassette to be stored in the box and for preventing rotation of the two hubs of the cassette. When several cases form a side-by-side collection, cassettes can be removed and inserted without removing individual cases from the collection.

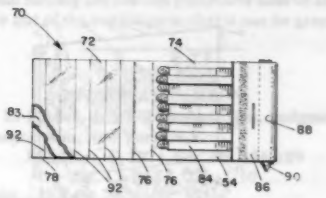
3,763,995

MATCH-BOOK FOLDER

Christos G. Paraskevas, 308 Hemlock St., Brooklyn, N.Y.

Filed June 4, 1971, Ser. No. 149,955
Int. Cl. A24f *27/12*
U.S. Cl. 206—29 8 Claims

A match-book folder comprising a sheet of flexible material, the latter being divided into a plurality of flat panels displaceable relative to one another into generally superposed relation. A plurality of matches are connected to at least one of the panels and at least another of the panels is displaceable over the matches such that the latter are interpositioned between the latter said panel and the panel to which the matches are connected. At least one of the panels includes a striking area for flame-inducing operative association with a



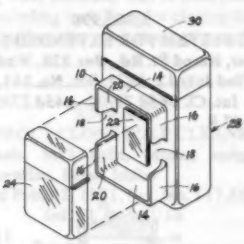
match. Furthermore, reproducible paper, such as carbon paper, is interpositioned between at least two of the panels so as to transfer an imprint made on one panel to a panel extending in superposed relation with the latter. The folder furthermore comprises a receptacle for detachably receiving an imprinting tool such as a pencil or the like to be utilized in association with the reproducible paper.

3,763,996

RECEPTACLE FOR CIGARETTE LIGHTER

James C. Shepherd, c/o Truck Terminal Motels of America, Rt. No. 1, Myerstown, Pa.

Filed Dec. 1, 1971, Ser. No. 203,788
Int. Cl. B65d *85/10*
U.S. Cl. 206—41.4 7 Claims



A receptacle for a cigarette lighter comprising side and end walls attached to a back member which may be attached to or be part of a wall panel of a cigarette case. A flat permanent magnet is attached to said back member to detachably secure a cigarette lighter within the walls of the receptacle and an opening in at least one of the side walls permits access of a human finger to the side and innermost surface of the lighter to facilitate removing it from said receptacle when it is to b used.

3,763,997

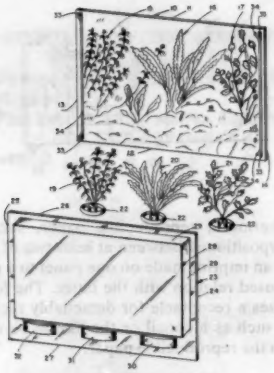
DISPLAY PACKAGE FOR AQUARIUM ACCESSORIES

Allan H. Willinger, New Rochelle, and Albert J. Dinnerstein, Far Rockaway, both of N.Y., assignors to Metaframe Corporation, Maywood, N.J.

Filed Jan. 20, 1971, Ser. No. 107,979
Int. Cl. B65d *25/54*, *77/08*; A01k *64/00*
U.S. Cl. 206—45.34 10 Claims

A display package for aquarium accessories comprising an illustrative backing support and transparent chamber-defining cover connected to one another. A plurality of ornamental objects such as aquatic life replica differing from one another are each interposed between the illustrative support and cover internally of the chamber of the latter. The ornamental objects

are generally similar respectively to corresponding illustrated objects on the illustrative support and are detachably secured within the chamber of the transparent cover such that the ornamental objects specifically coincide with corresponding of the illustrated objects respectively. The display package is instructive in the sense that upon the dismantling thereof, the il-



lustrative support may be affixed to the rear panel of an aquarium and the ornamental objects can be disposed within the aquarium in a manner similar to the package itself such that the ornamental objects respectively coincide with corresponding illustrated objects to enhance an appearance of ornament multiplicity and rearward depth.

3,763,998

SHAVING SYSTEM FOR EXTENDED BLADE LIFE

Arthur I. Fisher, Herod Pt. Rd., Box 228, Wading River, N.Y.

Filed July 12, 1971, Ser. No. 161,832

Int. Cl. B65d *79/00*; A45d *27/00*

U.S. Cl. 206—47 R **4 Claims**

A shaving outfit includes a compartmentalized package carrying a whisker softening and/or face conditioning agent and an applicator pad for lubricating the cutting edge of a conventional shaving blade. The applicator pad is constructed of synthetic foam and secured to the underside of an overcap of an aerosol bomb carrying shaving cream. The cutting lubricant is silicone based and impregnated in the pad so that a lubricating coating will be applied to the cutting edge of a razor blade when the razor is inserted into an inverted overcap and pressed against the pad. The user prepares the area to be shaved in the normal manner, applying the conditioning and softening agent, e.g. shaving cream, thereto and then shaves by cutting the hairs with the blade edge while sliding the lubricated edge over the skin.

3,763,999

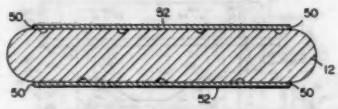
CLOTH-BOARD REEL

Joseph T. Yovanovich, Rosemont, Pa., assignor to Milton Berger, Philadelphia, Pa., a part interest

Continuation-in-part of Ser. No. 116,869, Feb. 19, 1971, Pat. No. 3,682,816. This application June 1, 1971, Ser. No. 148,482

Int. Cl. B65h *75/06*

U.S. Cl. 206—50 **6 Claims**



A cloth-board reel is provided with a core made of plastic material. The core is provided with flat, substantially wide oppositely facing fluted sides and rounded narrow longitudinally extending edges. At least the substantially wide oppositely facing fluted sides of the core are lined with rather heavy paper stock. The two ends of the core are not lined with the paper stock.

3,764,000

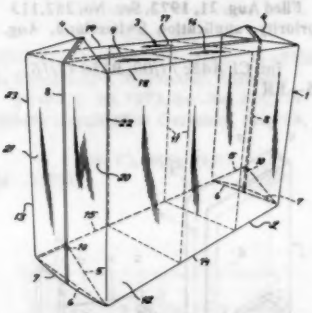
DISPOSABLE PACKAGES FOR FLEXIBLE SYNTHETIC-RESIN CONTAINERS

Hans G. Jentsch, Darmlerstrasse 4, Essen, Germany

Filed June 28, 1971, Ser. No. 157,331

Int. Cl. B65d *85/62*

U.S. Cl. 206—65 R **8 Claims**



A disposable package having a plurality of flexible-wall synthetic-resin receptacles, e.g., milk or other bulk-material receptacles of the bag type (nonselfsupporting or collapsible), consists of a heat-sealed skin drawn snugly around the receptacle. The skin is preferably a bottom-fold or side-fold enclosure composed of an opaque synthetic-resin foil and may be charged with nitrogen to reduce deterioration of the packaged contents.

3,764,001

CROWN-SUPPORT CARRIER WITH STRAIGHT LOCK

Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

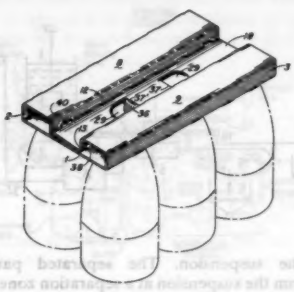
Continuation of Ser. No. 874,168, Nov. 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 826,850, May 22, 1969. This application Oct. 4, 1971, Ser. No. 186,554

Int. Cl. B65d *71/00*

U.S. Cl. 206—65 E **1 Claim**

An improved multiple-article carrier of the crown-support variety comprising a bottom panel, side wall panels, elevation

panels and crown-cover panels. The elevation panels are disposed along the inner edges of the article crowns and lie in



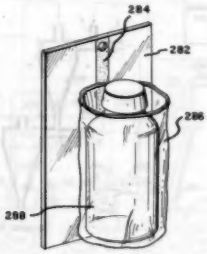
a plane substantially parallel with the planes of the side wall panels. The crown-covers completely cover the article crowns thus affording increased protection.

3,764,002

CARDED PACKAGE

William Spiegel, Southampton; Jacob Spiegel, Philadelphia, both of Pa., and Albert Miller, Somerdale, N.J., assignors to Gilbreth Company, Philadelphia, Pa.

Filed Apr. 28, 1971, Ser. No. 138,056
Int. Cl. B65d *73/00*
U.S. Cl. 206—80 A **8 Claims**



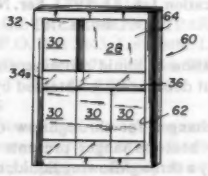
A carded package comprising a container and a card, and a heat shrinkable tube permanently secured to said card. The tube may be secured by either a line of adhesive or a spot of adhesive. Heat is applied to the finished package in order that the tubing will shrink to apply pressure to the container and the card in order to produce a stable attractive package.

3,764,003

TAPE CASSETTE HOLDER

Michael Loss, 1879 Manor Dr., Union, N.J.

Filed Jan. 28, 1971, Ser. No. 110,739
Int. Cl. A45c *11/28*
U.S. Cl. 206—.83 **10 Claims**



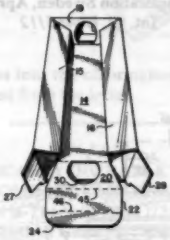
A holder for storing protective cases for tape cassettes is provided. The holder comprises a rectangular enclosure which is sealed off at one end by a resilient wall member and is at least partially sealed off at its other end by a resilient retaining wall member. The enclosure is adapted to quite snugly receive the number of protective cases to be stored since additional room need not be allowed to permit one to reach into the enclosure to effect removal of one of the protective cases. Such removal is readily effected by pushing on the resilient wall member and forcing the desired protective case to at least partially move out of the enclosure so that it can be grasped.

3,764,004

DISPLAY CARTON

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Nov. 5, 1971, Ser. No. 196,109
Int. Cl. B65d *5/22, 5/50*
U.S. Cl. 206—45.14 **1 Claim**



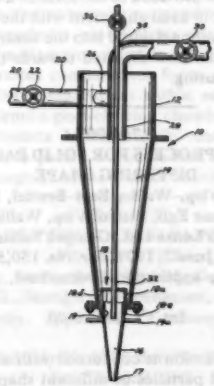
A frame view carton is disclosed based on the principles of construction of a tuck style carton wherein the front wall of the carton is adhered directly to the back wall with shadow panels extending from the front wall at both ends and sides of the carton and including tuck flaps for closing the carton as an integral part of either the end shadow panels or the side shadow panels.

3,764,005

HYDROCYCLONE PULP CLEANER

Rudolph Zemanek, Int'l Falls, Minn., assignor to Boise Cascade Corporation, Boise, Idaho

Filed Feb. 22, 1971, Ser. No. 117,566
Int. Cl. B04c *5/16*
U.S. Cl. 209—211 **9 Claims**



This invention is a hydrocyclone pulp cleaner having a single conical shell divided into two separation chambers by an improved baffle construction which materially increases the efficiency of separation thus increasing the percentage of ac-

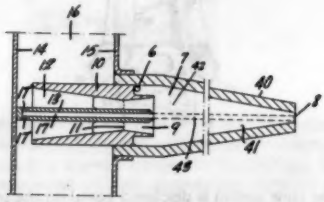
ceptable material and reducing the percentage of bottom reject material. The dividing baffle is constructed to provide an inlet for the material entering upper portion of the bottom chamber in a substantially tangential direction at the upper portion of the side wall of the lower chamber and in the form disclosed the size of the inlet opening is adjustable. The baffle is also designed to retard the flow of pulp from the top to the bottom chamber and is provided with a central discharge to remove the acceptable material from the bottom separation chamber upwardly through the baffle.

3,764,006

CYCLONIC SEPARATOR WITH LIQUID FLOW ADDED AXIALLY

Nils Anders Lennart Wikdahl, 182 64 Djursholm, Bravallavagen, Sweden

Filed Apr. 1, 1971, Ser. No. 130,115
Claims priority, application Sweden, Apr. 1, 1970, 4487/70
Int. Cl. B04c 5/12
U.S. Cl. 209—211 **17 Claims**



A process is provided for separating from cellulose fiber suspensions particles lighter than or having approximately the same density as the fibers, which comprises subjecting the fiber suspension to centrifugal forces, so as to concentrate the heavier particles in liquid in a peripheral zone and concentrate the lighter particles including fibers in liquid in a central zone of the suspension, withdrawing liquid with the heavier particles from one end of the peripheral zone, withdrawing liquid with the fibers from the opposite end of the central zone, introducing additional liquid into the central zone of the suspension, and directing the flow of such axially in the direction of liquid flow in the peripheral zone.

Apparatus also is provided in the form of a cyclonic separator having an inlet in axial alignment with the apex end outlet for introducing additional liquid into the central portion of the chamber as an axial flow directed towards the outlet at the apex end of the housing.

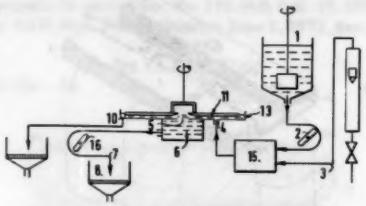
3,764,007

SEPARATION PROCESS FOR SOLID PARTICLES OF DIFFERING SHAPE

Eduard Schmid, Visp, Wallis; Beat Bruttel, Seehof; Reinold Nascher, and Rene Egli, both of Visp, Wallis, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed June 7, 1971, Ser. No. 150,531
Claims priority, application Switzerland, July 15, 1970, 10742/70
Int. Cl. B04c 1/00
U.S. Cl. 209—211 **20 Claims**

The present invention is concerned with a process for the separation of solid particles of different shape but of similar weight, wherein the particles to be separated are suspended in a liquid. In the suspension there is produced, with the exclusion of turbulence, a flow velocity profile by imparting to a 2 - 20 mm. thick layer of the suspension, a rotary movement by the use of two discs, at least one of which is rotating, which discs bound the layer of suspension above and below, there being a difference of rotational speed between the two discs. Those particles which, due to their form, are not carried by the suspending liquid throughout the flow thereof, separate



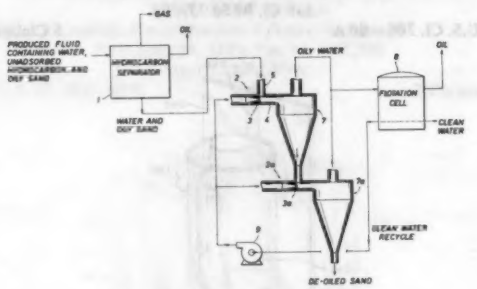
out from the suspension. The separated particles are withdrawn from the suspension at a separation zone.

3,764,008

WELL OPERATION FOR RECOVERING OIL FROM PRODUCED SAND

Henry C. H. Darley, Houston, Tex., and Morris C. Place, Jr., New Orleans, La., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 27, 1972, Ser. No. 248,073
Int. Cl. B01d 21/26
U.S. Cl. 210—73 **7 Claims**



In a well operating process for treating a mixture of water, unadsorbed gas and/or liquid hydrocarbons, and oily sand, after removing the unadsorbed hydrocarbons, the sand is deoiled by repeatedly entraining it in streams of relatively high speed jets of water, centrifically separating an overflow of oily water and an underflow of sandy water in which the sand is substantially oil-free, and removing the oil from the overflow to leave a water which is substantially oil-free.

3,764,009

APPARATUS FOR USE IN THE FRACTIONATION OF PROTEINACEOUS SOLUTIONS

John G. Watt, Bonnyrigg, Midlothian, Scotland, assignor to National Research Development Corporation, London, England

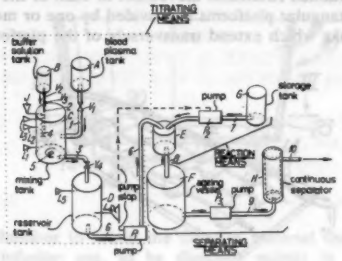
Continuation of Ser. No. 23,833, March 30, 1970, abandoned.
This application Jan. 31, 1973, Ser. No. 328,358
Int. Cl. B03d 3/02
U.S. Cl. 210—96 **12 Claims**

In the fractionation of liquid proteins, an increased rate of producton without denaturing is obtained by use of apparatus including

(a) a heat-exchanger for throughflow of a cooling fluid whereby the heat-exchanger presents cooling surfacing for contact by a throughflowing liquid; and

(b) a pair of nozzles for discharging respectively jets of proteinaceous solution and liquid precipitant, the nozzles being so disposed that the jet liquids convergingly merge to form a composite stream which impinges on the cool-

ing surfacing of the heat exchanger and instantly on impingement becomes a reaction mixture containing the



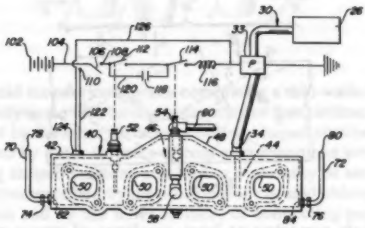
precipitated protein fraction which reaction mixture then flows over the cooling surfacing and from the heat exchanger.

3,764,010

APPARATUS AND METHOD FOR CLEANING WASTE DISPOSAL SYSTEMS

James S. Reid, Hudson, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Oct. 15, 1970, Ser. No. 80,982
Int. Cl. B01d *21/24*
U.S. Cl. 210—149 **3 Claims**



A waste disposal system of the type including vaporizing means and feed means for feeding liquid and organic waste material to the vaporizing means is provided with means for stopping operation of the feed means while supplying heat to the vaporizing means to raise its temperature substantially above the boiling point of water. The feed means is then started to supply liquid to the vaporizing means whereby the liquid flashes into steam substantially instantaneously and breaks caked deposits from the walls of the vaporizing means.

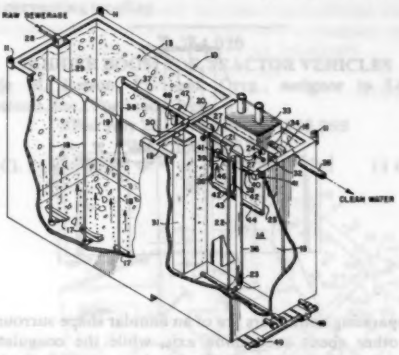
3,764,011

SEWAGE TREATMENT APPARATUS

Dewey E. Owens, P.O. Box 2443, Lafayette, La.

Filed Dec. 16, 1971, Ser. No. 208,834
Int. Cl. C02c *1/08*
U.S. Cl. 210—195 **6 Claims**

A portable self-contained sewage treatment plant particularly designed to meet the needs of small sub-divisions and the like contains within a single tank body an aeration chamber, a settlement chamber and a chlorination chamber. The plant features an aeration system which also serves to power jets for the return of heavy and light solids from the settlement chamber into the aeration chamber. A floating skimmer in the settlement chamber removes light solids from the surface of the liquid for delivery to one return jet. Liquid from the settle-



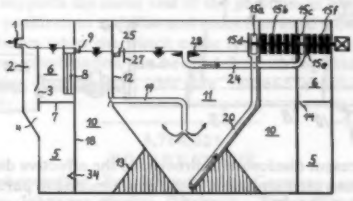
ment chamber flows into the chlorination chamber and clear effluent is discharged from the latter.

3,764,012

AUTOMATICALLY OPERABLE TWO-STAGE BIOLOGICAL COMPACT CLEARING INSTALLATION

Botho Bohnke, Maria-Theresia Allee 231, Aachen, and Paul Diers, Ellendorf, both of Germany, assignors to said Bohnke, by said Diers, Aachen, Germany

Filed July 24, 1972, Ser. No. 274,630
Int. Cl. B01d *21/02*; C02c *1/02*
U.S. Cl. 210—195 **4 Claims**



An automatically working two stage aerobic biological compact clearing installation, in which a single container is subdivided into a plurality of coaxial compartments one within the other, in which the outermost compartment comprises an upper section forming a pre-agitating chamber and a lower section forming a digesting chamber, while the compartment within the outermost compartment forms an activating compartment and the compartment within said last mentioned compartment forms a post-clearing chamber, the three mentioned compartments hydrostatically communicating with each other so as to permit a trouble-free unimpeded flow of waste water through all of the compartments.

3,764,013

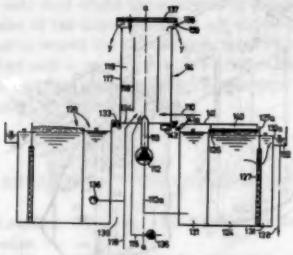
APPARATUS FOR SEPARATING PAINT OR THE LIKE FROM WATER

Rolf Eisenmann, Stuttgart-Weilimdorf, Germany, assignor to Otto Durr K.G., Stuttgart-Zuffenhausen, Germany

Claims priority, application Germany, Apr. 7, 1970, P 20 16 414.1
Filed July 29, 1970, Ser. No. 59,132
Int. Cl. B03d *1/00*
U.S. Cl. 210—205 **10 Claims**

A method and apparatus for separating paint or the like from water, especially for purifying the water before passing it into a lake, river or the like, by initimately mixing the paint-contaminated water with a coagulant and compressed air so as to form a foamy mixture, then allowing the foam to float quickly to the surface of the water,wiping the foam off said

surface and filtering the water before discharging it from the apparatus. The apparatus is preferably designed as a circular unit requiring relatively little ground space in which the various separating containers are of an annular shape surrounding each other about a common axis, while the coagulator is mounted above the central cylindrical space within the innermost annular container and extends likewise coaxially thereto.

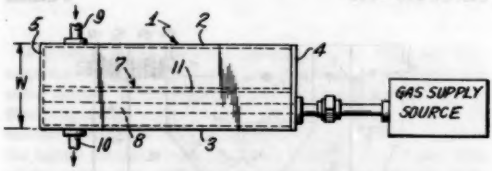


3,764,014

MASS TRANSFER DEVICE

Arthur M. Stern, Morrisville, and Lawrence L. Gasner, Feasterville, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Nov. 8, 1972, Ser. No. 304,689
Int. Cl. B01f *3/04*
U.S. Cl. 210—220 **19 Claims**



The present disclocure is directed to the effective dispersion of a gaseous medium into a liquid medium, and in particular to a device which will serve this function. The device structurally is a thin channel chamber having an inlet and an outlet, at least one baffle located so as to separate the front and back walls of the chamber and of such height as to assure that its upper edge is below the outlet with its lower edge above the floor of the chamber, and at least one gas supply means located out of the vertical plane of the baffle, the height of the chamber as measured from the floor thereof to the outlet being significantly greater than the width of the chamber as measured by the distance between the front and back wall. The device finds particular application in the reduction of Biological Oxygen Demand and Total Organic Carbon in waste water streams.

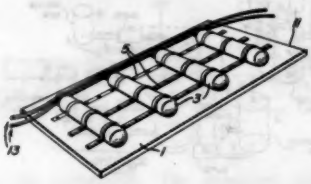
3,764,015

APPARATUS FOR CONFINING FLOATING POLLUTANTS

Emmet H. Rolfson, R.R. 3, Estherville, Iowa

Filed May 3, 1972, Ser. No. 250,062
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **3 Claims**

A sizeable number of substantially rectangular buoyant lightweight and fireproof platforms are provided which are connected in series and adapted to be towed to the site while flat, made to surround the area from which the pollutants are to be removed, and then rotated approximately 180° on their axes to assume a substantially vertical position. While in vertical position these substantially rectangular platforms are adjustable as to the depth to which they extend. After the pollutants have been removed to a satisfactory extent, the substantially rectangular platforms are rotated on their longitudinal axes to assume their initial flat position, and then towed away while still serially connected as before. Means for effecting the aforementioned rotational movement of each of the substantially rectangular platforms is provided by one or more elongated tanks which extend transversely of the platforms, and which are divided by an airtight partition into an airtight flotation compartment and an airtight ballast compartment, together with means for adjusting the quantity of water in each of the ballast tanks; also for adjusting the depth to which the platforms extend into the water when in their vertical positions.

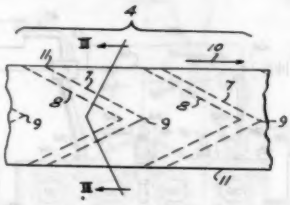


3,764,016

BELT FOR PICKING UP LIQUIDS

Richard B. H. Sewell, and Simon P. Nelson, both of Victoria, British Columbia, Canada, assignors to R.B.H. Cybernetics (1970) Ltd., Victoria, British Columbia, Canada

Filed May 25, 1972, Ser. No. 257,014
Int. Cl. E02b *15/04*
U.S. Cl. 210—400 **6 Claims**



The belt comprises at least one layer of strong material (e.g., canvas) stitched to at least one layer of absorbent material (e.g., terry cloth). The stitching is arranged in a herringbone pattern of inclined rows extending from apices along the centre line, and the edges are free of further stitching. This arrangement facilitates squeezing of absorbed liquid laterally out of the belt between squeeze rollers.

3,764,017

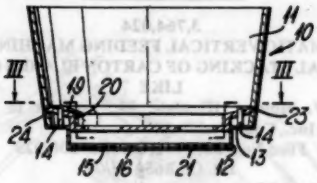
INFUSION FILTER

Jay L. Dover, Ottawa, Ontario, Canada, assignor to International Travel & Transportation Company Limited, Nassau, Bahama Islands

Filed Aug. 12, 1971, Ser. No. 171,201
Claims priority, application Canada, Feb. 4, 1971, 104468
Int. Cl. B01d *35/28*
U.S. Cl. 210—481 **10 Claims**

An improved infusion filter is provided. The filter includes a main single open-ended frusto-conical chamber, an annular ledge integral with the closed end of the chamber at the end having the smaller diameter, a depending, auxiliary cylindrical chamber integral with the ledge and depending from the main chamber, the auxiliary cylindrical chamber having a perforated main bottom to which is fixed a filter disc, the auxiliary chamber being of smaller diameter than the main chamber, and a perforated retaining disc mounted within the main chamber adjacent the auxiliary chamber. The improvement resides in providing the retaining disc with a central,

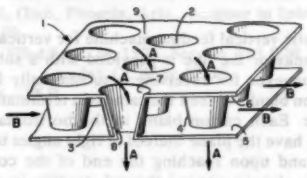
depressed portion which is adapted, prior to infusion use of the filtering device, to be disposed within the auxiliary cylindrical chamber to retain the infusion material therein, and during infusion use, to be disposed mainly in the main chamber.



3,764,018
FLUID TRANSFER MEMBRANE USE THEREOF AND METHOD OF MANUFACTURE THEREFOR

Richard Gregg Shaw, Califon, and Joseph Sylvan Byck, Kendall Park, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 15, 1971, Ser. No. 153,337
Int. Cl. B01d *31/00*
U.S. Cl. 210—500 4 Claims

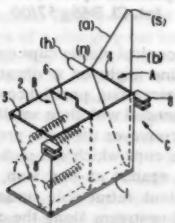


A fluid transfer membrane comprising a thin-walled permeable polymeric film having a plurality of first orifices circumscribed by the inner surfaces of oblong shaped portions of said film and by outer surfaces of connecting portions joining said oblong shaped portions and having a plurality of second orifices circumscribed by the outer surface of said oblong shaped portions and by the inner surfaces of connecting portions of said film joining said oblong shaped portions at both ends thereof. This fluid transfer membrane is useful in chemical, biomedical and pharmaceutical fluid transfer operations.

3,764,019
CLOTHES HANGER SUPPORT AND STORAGE APPARATUS

Adelene B. Creamer, and Marven Creamer, both of 137 Palmer Ave., Mountain View, Calif.

Division of Ser. No. 848,893, Aug. 11, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 180,985
Int. Cl. A47j *51/08*; A47f *7/24*
U.S. Cl. 211—49 R 3 Claims

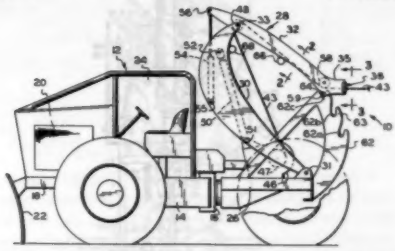


A clothes hanger support and storage assembly for conventional type wire clothes hangers. An assembly is disclosed for a box-like container with a sliding partition, and springs connected between a side of the box and the partition to urge the latter toward the opposite side compacting the hangers and thus preventing tangling.

3,764,020
SKIDDER BOOM FOR TRACTOR VEHICLES

Dossie M. Batson, Portland, Oreg., assignor to Logging Systems, Inc., Portland, Oreg.

Filed July 26, 1971, Ser. No. 165,969
Int. Cl. B66c *23/06*
U.S. Cl. 212—7 11 Claims

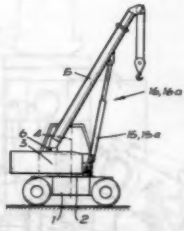


An articulated skidder boom includes a main boom pivoted to the rear of a skidder vehicle frame and a jib boom pivoted to the main boom. A winch mounted near the base of the boom has a winch cable which extends along the main boom to a guide sheave at the intersection of the main and jib booms and then through a fairlead at the outer end of the jib boom. Boom-operating cylinders enable swinging movement of the fairlead through a substantial arc from adjacent ground level to a position well above the vehicle and to various distances from the winch. A boom support bracket at the rear of the vehicle supports the outer end of the jib boom in one of three vertical positions to stabilize and resist rearward movement of the jib boom when the winch cable is under load. The winch and boom combination can be used for both log-skidding and log-loading operations, with the fairlead positioned accordingly.

3,764,021
ROTARY CRANE

Hans Scheuerpflug, Bad Mingolsheim, Germany, assignor to Firma Johannes Fuchs, Ditzingen, Baden-Wurttemberg, Germany

Filed Jan. 10, 1972, Ser. No. 216,592
Claims priority, application Germany, Jan. 14, 1971, P 21 01 514.5
Int. Cl. B66c *23/84*
U.S. Cl. 212—35 10 Claims



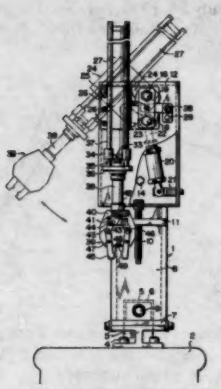
In a crane wherein an upper carriage is rotatably supported on a base and an elevated boom has at least one supporting strut deriving a vertical reference from a point offset from the axis of crane rotation, the invention provides at such reference a member slidably guided in the carriage and having roller contact with the base. The arrangement is such as to enable boom loading to be sustained directly by the base, regardless of the rotary position of the crane and regardless of such unevenness as may exist in the path of roller contact about the rotary axis of the crane.

3,764,022

VERTICAL TYPE TAKE-OUT DEVICE FOR INJECTION MOLDING MACHINES

Nobuhisa Ishida, and Toshiyuki Tsubouchi, both of Tokyo, Japan, assignors to The Sailor Pen Co., Inc., Tokyo, Japan

Filed Mar. 10, 1971, Ser. No. 122,817
Int. Cl. B66c *1/42*
U.S. Cl. 214—1 BD **7 Claims**



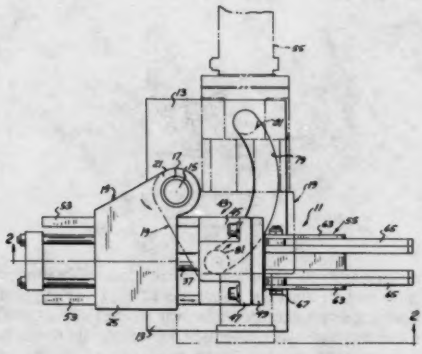
A vertical type automatic take-out device for injection molding machines comprising a head; a holder capable of swinging sidewise and sliding back and forth by means of cylinders; a product-chucking mechanism fitted to the holder to be moved in a vertical direction; and a supporting structure to fit the head to the injection molding machine, wherein, upon completion of injection molding, the chucking mechanism is made to move vertically and horizontally to take out products, with runners from the metal molds; thereafter the holder automatically swings to carry them to a prescribed place; and there is further provided a detecting unit to detect whether the chucking mechanism securely holds all products molded.

3,764,023

SWING-AWAY AUTOMATION WORKPIECE GRIPPER

Joseph M. Jatcko, 15555 E. 12 Mile Rd., Bloomfield Hills, Mich.

Filed May 3, 1972, Ser. No. 249,900
Int. Cl. B66c *1/42*
U.S. Cl. 214—1 BC **6 Claims**



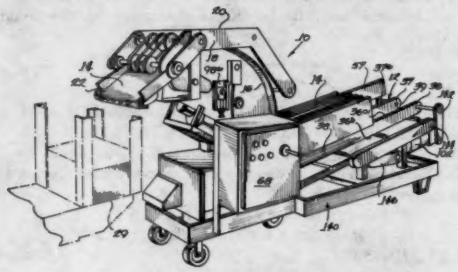
A swing-away automation workpiece gripper which, at rest, is in one position and when actuated, swings into a second angularly related position and successively engages a workpiece. Its power cylinder support is pivotally mounted on a vertical axis. Attached to the piston rod is a jaw assembly mount with a depending roller adapted to move along a cam slot for angularly positioning the complete assembly followed by an automatic jaw actuation.

3,764,024

AUTOMATIC VERTICAL FEEDING MACHINE FOR VERTICAL STACKING OF CARTON BLANKS OR THE LIKE

Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.

Filed Nov. 22, 1971, Ser. No. 200,929
Int. Cl. B65g *57/04*
U.S. Cl. 214—6 DS **13 Claims**



An automatic vertical feeding machine for vertical stacking of carton blanks or the like is provided with a substantially horizontal conveyor for receiving a substantially horizontal stack of carton blanks to feed the same to a terminating end of the conveyor. Each carton blank in the horizontal stack is positioned to have the plane thereof at right angles to the conveying path and upon reaching the end of the conveyor is picked up by elevator means through suction in a vacuum chamber over which a foraminous wall forms a part thereof. The elevator means is formed of a belt having a plurality of apertures therein which pass over the foraminous wall and to which the carton blanks are attracted by suction and elevated to a position above the horizontal conveyor. Upon reaching the top of the elevator the carton blanks are directed over an arcuate portion of the elevator belt to re-orient the plane of the blank to a horizontal position. The blank is then ejected at a dispensing station at the upper end of the machine so that it will fall into a vertical stack at the input of a carton handling machine or the like.

3,764,025

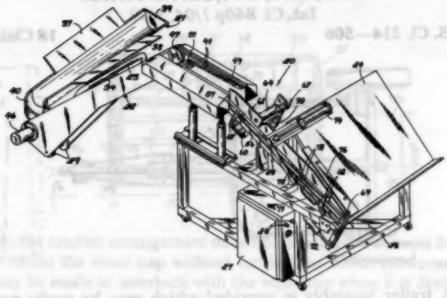
DEVICE FOR ORIENTING AND STACKING FRUSTOCONICAL ARTICLES

Hugh Van Melle, Islington, Ontario, and Herbert Rees, Toronto, Willowdale, Ontario, both of Canada, assignors to Husky Manufacturing & Tool Works Limited, Toronto, Ontario, Canada

Division of Ser. No. 19,978, March 16, 1970, Pat. No. 3,623,593. This application Apr. 30, 1971, Ser. No. 139,238
Int. Cl. B65g *57/00*
U.S. Cl. 214—7 **8 Claims**

A series of frustoconical plastic cups coming from an injection-molding machine alight on a vibratile trough directing them onto a pair of ascending, parallel conveyor belts between which they are suspended with their smaller end down. At the output end of the conveyor the belts are twisted and spread apart to release the cups which are picked up by a vibratile chute for stacking against an end stop. The latter may be preceded by a detent retractable under the control of a photocell, disposed upstream along the chute, which detects the trailing end of a stack of cups and closes a gate to prevent the advance of further cups past the cell while a lifting fork raises the stack to the level of an adjoining table onto which

the stacked cups are swept by a swingable arm. The trough may be tiltable into a reverse position to guide scrap away



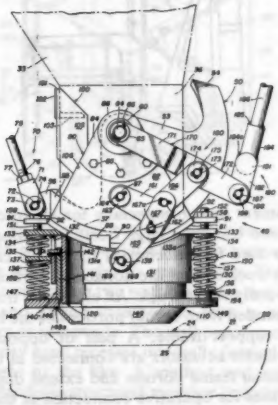
from the elevating conveyor at the beginning of a series of molding operations.

3,764,026

MATERIAL TRANSFER MECHANISM

Emmerich I. Olah, Phoenix, Ariz., assignor to Interlake, Inc., Chicago, Ill.

Filed Sept. 20, 1971, Ser. No. 181,879
Int. Cl. B66c *17/08*
U.S. Cl. 214—35 R **30 Claims**



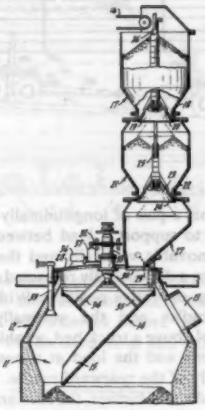
The transfer mechanism finds particular use in transferring coal from the hoppers of a charging-car into coal-carburizing ovens. The mechanism has a chute mounted adjacent to the outlet of the hopper so as to be movable to a discharge position wherein the chute is aligned with the outlet of the hopper and the inlet of the oven; and to a storage position. The chute includes at least two telescoping sections which are movable between retracted and extended conditions. There is provided an actuating mechanism coupled to the chute and operable to move the chute to the discharge position thereof followed by placing the telescoping sections in their extended condition so as to engage in the inlet of the oven; the actuating mechanism is also operable to retract the telescoping sections and then move the chute to its storage position.

3,764,027

BLAST FURNACE HIGH TOP PRESSURE CHARGING SYSTEM

Leo T. Tokarz, Chicago, Ill., assignor to John Mohr & Sons, Chicago, Ill.

Filed Jan. 7, 1972, Ser. No. 216,145
Int. Cl. F27b *11/12*
U.S. Cl. 214—37 **4 Claims**



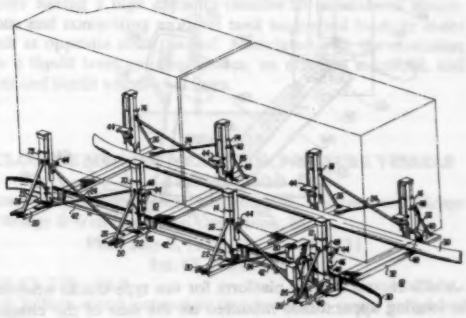
A blast furnace high top pressure charging system, and a method of operating such a system, in which burden materials are charged into a receiving hopper which is pressure isolated from the balance of the charging system, and thence into a small bell hopper from whence it is charged into the furnace. A conical revolving hopper is located within the furnace in lieu of the conventional bell system. The revolving hopper can be operated either during passage of burden materials into the furnace, or between successive charges, to thereby provide uniform distribution into the furnace together with decreased drop heights.

3,764,028

CONTAINER STALL INTERCHANGE

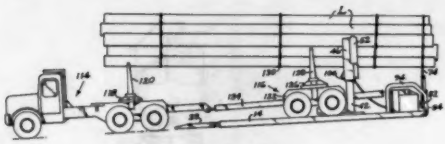
Horace D. Blackburn, 333 Sixth Ave. West, Bradenton, Fla.

Filed May 9, 1972, Ser. No. 251,819
Int. Cl. B65g *67/24*
U.S. Cl. 214—38 CC **3 Claims**



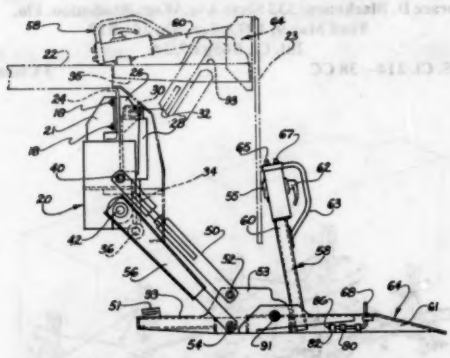
A stall construction for individually lifting, lowering and removing multiple cargo containers from transport vehicles is described.

3,764,029
TRUCK PRE-LOADER
Joseph L. Riley, 14109 S.E. Fair Oaks Ave., Milwaukie, Oreg.
Filed June 2, 1972, Ser. No. 259,221
Int. Cl. B65g 67/12
U.S. Cl. 214—41 25 Claims



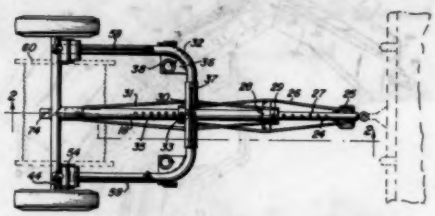
A frame mounts a pair of longitudinally spaced, transverse cradles adapted to support a load between them. The rearward cradle is movable vertically and the forward cradle is pivotable between a downwardly retracted position and an upwardly extending, operative position. With a load supported between the cradles and the vertically movable cradle elevated to a level above a truck bed, a cable is interconnected between the frame and the load at a position on the latter spaced rearwardly of the rearward cradle. Then, by elevating the rearward cradle still further, the forward end of the load is elevated from the forward cradle to a level above the truck bed, whereupon the forward cradle is retracted. A truck then may be moved to position its bed under the portion of the load extending forwardly of the rearward cradle, whereupon lowering of the latter effects deposit of the load on the truck bed.

3,764,030
SIDE MOUNT LOADING PLATFORM FOR VAN TYPE TRUCK
Francis R. Randall, Mount Gilead, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.
Filed Dec. 29, 1971, Ser. No. 213,407
Int. Cl. B60p 1/48
U.S. Cl. 214—77 P 8 Claims



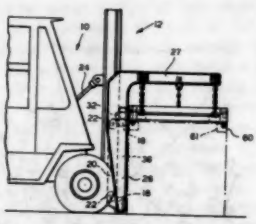
A side mount loading platform for van type trucks wherein the loading apparatus is mounted on the side of the chassis frame with said loading apparatus completely enclosed within the confines of the side panels and loading door of the vehicle. As another aspect, when the loading apparatus is disposed in an upper storage position it functions to form a closure that registers with a cut-out in the truck floor.

3,764,031
PORTABLE AND CONVERTIBLE REEL AND SMALL EQUIPMENT CARRYING TRAILER
Edward M. Parsen, Miller, S. Dak., assignor to The Rausen Corporation, Milbank, S. Dak.
Filed June 3, 1971, Ser. No. 149,686
Int. Cl. B60p 1/04, 3/00
U.S. Cl. 214—506 18 Claims



A trailer assembly is provided which may be easily converted to carry various size cable reels or small construction equipment such as a trencher. The assembly includes an axle portion with a pair of telescopic reel supports, a telescoping tongue portion for pulling the axle portion, and a pair of channel-shaped rails for transporting the construction equipment.

3,764,032
CONTAINER HANDLING DEVICE
William H. Ward, Athens, Mich., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Dec. 9, 1971, Ser. No. 206,354
Int. Cl. B66f 9/16
U.S. Cl. 214—621 14 Claims



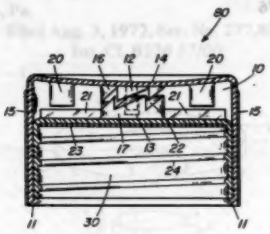
An attachment device especially for lift trucks adapted to engage, lift and transport large freight containers. A support frame is provided for attachment to the lift carriage on the mast of a lift truck so that the horizontal portion of the frame extends forwardly of the truck. An elongated transverse lifting frame is suspended from corner portions of the horizontal portion of the support frame. A pair of oppositely disposed hydraulic cylinder actuators are connected at their one ends to the horizontal frame portion and extend diagonally in opposite directions for operative connection at their other ends to the lifting frame so that the lifting frame may be side shifted in either direction relative to the truck by energizing one or the other of the cylinders.

3,764,033
SAFETY BOTTLE CAP
Bernard Smith, 7102 Plymouth Rd., Baltimore, Md., and Anthony J. DePietro, School House Ln., Springfield, Pa.
Filed Nov. 26, 1971, Ser. No. 202,095
Int. Cl. B65d 55/02
U.S. Cl. 215—9 5 Claims

A safety cap for use on bottles, consisting of a cap within a cap arrangement, is provided. The inner cap is designed for being threaded onto the neck of a bottle for closing the opening. Over this inner cap, there is mounted an outer cap which, by means of a ratchet arrangement, interlocks with the inner

cap when it is turned in a clockwise direction to apply the inner cap to the bottle.

When the outer cap is turned in a counter-clockwise direction in an attempt to remove the inner cap from the bottle, the ratchet arrangement does not interlock, but turns freely about the inner cap without turning the same. However, it may be made to interlock with the inner cap when it is desired to remove the same from the bottle, by pressing down on the concave top of the outer cap thereby engaging certain stops.

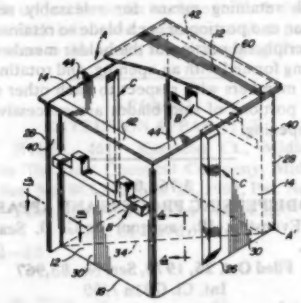


3,764,034

MODULAR STRUCTURAL MEMBER AND METHOD AND APPARATUS FOR MAKING SAME

Warren L. Klugman, Berea, Ohio, assignor to Ceilcote Company, Berea, Ohio

Filed May 4, 1970, Ser. No. 34,333
Int. Cl. B65d *11/10*
U.S. Cl. 220—4 E 3 Claims



A one-piece modular structural member formed of reinforced synthetic plastic material includes a pair of wall portions extending perpendicular to one another. The structural member is designed so that two such members may be reversely positioned and joined together to form a substantially rectangular duct or receptacle. The wall portions of the structural member may have recesses integrally formed therein for supporting beams or the like. A method and apparatus for making such a modular structural member includes the use of adjustable flange means so that the modular structural member may be formed in a plurality of different sizes on the same forming apparatus. In the method, fibrous glass mat is laid on a form and wetted with curable synthetic plastic material. The fibrous glass and resin extend up the flange means to form integral joining flanges on the structural member.

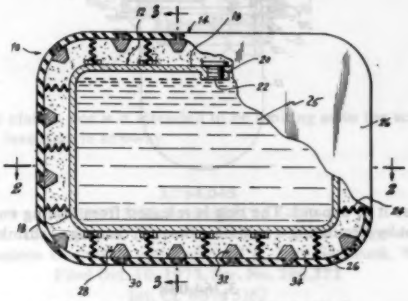
3,764,035

SAFETY STORAGE STRUCTURE

Ralph Silverman, 4326 Larchwood Ave., Philadelphia, Pa.

Filed Nov. 12, 1970, Ser. No. 88,676
Int. Cl. B65d *25/00*
U.S. Cl. 220—15 10 Claims

A container assembly for storing dangerous liquids has an inner container made wholly or in part of relatively brittle material, containing dangerous liquid, and an outer container made of relatively elastic material and containing a neutralizing liquid or fluid. Elastic members inside the outer container support the inner container in spaced relationship. Rigid members carried between the walls of the containers are arranged to shatter the inner container in the event an excessive impact is applied to the outer container. The dangerous and neutralizing liquids will interact before the outer container ruptures. Positions of the dangerous and neutralizing liquids can be reversed.



3,764,036

CRYOGENIC LIQUID STORAGE SYSTEMS

Alan M. Dale; David L. Martindale, both of La Mesa, Calif., and Richard C. Mursinna, San Diego, Calif., assignors to Ametek, Inc., El Cajon, Calif.

A liquid storage system which includes a double-walled container having a high capacity relative to its external dimensions and comprising an inner tank supported from an outer tank at opposite ends thereof. Associated with the container are a liquid level gauging system, an external manifold, and vent and liquid withdrawal lines.

3,764,037

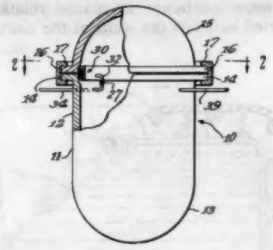
CLOSURE SEALING MEANS FOR PRESSURE VESSELS AND METHOD

Elmer Weyman Rothrock, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed July 2, 1971, Ser. No. 159,421
Int. Cl. B65d *53/00*
U.S. Cl. 220—46 P 12 Claims

A hollow metal expansion ring having an outer peripheral surface with spaced apart sealing means thereon adapted to pressure seal with a peripheral joint of two members, such as a vessel and cover therefor, positioned therearound with the interface of the joint located between the spaced apart sealing means. A conduit communicates with the ring interior for sup-

plying a fluid thereto and another conduit withdraws the fluid. Sealing is effected by circulating a hot fluid through the ring to



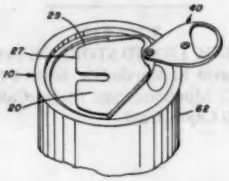
cause it to expand. The ring is released from sealing engagement by circulating a cold fluid through the ring to shrink it.

3,764,038

EASY OPENING CONTAINER WALL

Robert E. Heffner, Lower Burrell, Pa., assignor to Aluminum Company of America, New Kensington, Pa.

Filed Dec. 27, 1971, Ser. No. 212,232
Int. Cl. B65d *17/00*
U.S. Cl. 220—48 9 Claims



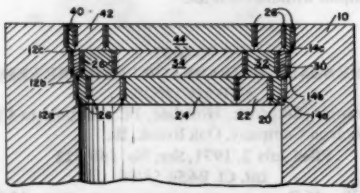
An easy opening container wall is provided including a score line defining a panel which is at least partially removable from the wall and a tab with a nose end overlying the container wall and affixed to the removable panel near its starting end and a handle end toward the opposite edge of the container wall, and which further includes a tear strip defined by a U-shaped score with its open end toward the starting end of the removable panel and its starting end attached to the tab.

3,764,039

CLOSURE ASSEMBLY FOR PRESSURE VESSELS

Svend M. Jorgensen, 90 Prospect Ter., Tenafly, N.J.

Filed Aug. 12, 1971, Ser. No. 171,224
Int. Cl. B65d *55/24*
U.S. Cl. 220—55 A 6 Claims



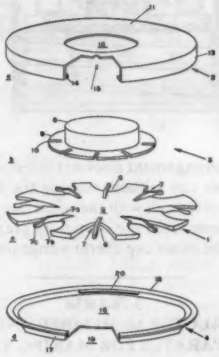
A closure assembly for a vessel, wherein a ring assembly is mounted between a disc and the vessel wall to close one end portion of the vessel. The ring assembly is connected to the vessel wall and to the disc by means of threaded shear studs.

3,764,040

RAZOR BLADE DISPENSERS

Arieh Solomon, 38 Hasharsheret St., Afeka, Tel-Aviv, Israel

Filed May 15, 1972, Ser. No. 253,444
Int. Cl. B65d *83/10*
U.S. Cl. 221—76 3 Claims



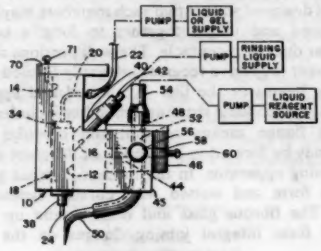
A razor blade dispenser comprising holder and cover members rotatably coupled together, the holder member being formed with retaining means for releasably retaining the blades with an end portion of each blade so retained located in a discrete peripheral portion of the holder member, the cover member being formed with an opening, and rotating means for rotating the members with respect to each other so that successive end portions of said blades are successively located within said opening.

3,764,041

MICRODISPENSING PROCESS AND APPARATUS

Hans Noll, Evanston, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Filed Oct. 26, 1970, Ser. No. 83,967
Int. Cl. G01n *1/00*
U.S. Cl. 222—1 13 Claims



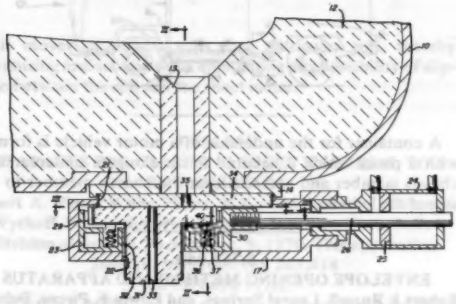
A process and apparatus for the precise dispensing of very small volumes of liquids or gels wherein the means delivering such liquids or gels to collection vessels is rinsed at the end of each dispensing interval, thereby cutting a continuous stream of such materials into fractions of equal volume regardless of drop size. A process and apparatus which permits addition of reagent fluids to each of the collection vessels in conjunction with the dispensing of the fractions to be studied.

3,764,042

RECIPROCABLE SLIDABLE GATE WITH ROTATING SLIDE ELEMENT

Earl P. Shapland, Champaign, Ill., and James T. Shapland, Pittsburgh, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 3, 1972, Ser. No. 277,830
Int. Cl. B22d *37/00*
U.S. Cl. 222—1 7 Claims



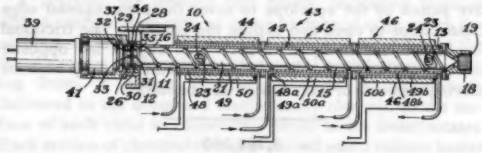
A slidable gate mechanism for controlling teeming of material from a bottom-pour vessel, and a method of controlling teeming. The closure element is a disk which is mounted for rotational movement in a linearly reciprocable tray. The disk has a teeming opening on its central axis movable into alignment with the vessel outlet, and an imperforate area movable under the outlet to close it. Each time the outlet is closed, the disk is indexed to present a fresh portion of the imperforate area to the outlet, thus prolonging life of the disk.

3,764,043

EXTRUSION APPARATUS

Donald R. Wright, 4615 Kingston Ct., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 803,348, Feb. 28, 1969, Pat. No. 3,619,329.
Filed Dec. 10, 1970, Ser. No. 96,897
Int. Cl. B67d *5/62*
U.S. Cl. 222—55 1 Claim



A lightweight plastics extruder is disclosed which can be used with particular benefit in the preparation of structures wherein a foamable plastic is extruded in a desired location and the extruder moved as foam material is deposited.

3,764,044

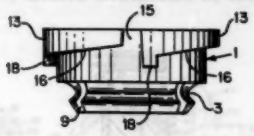
AEROSOL CAN ADAPTER

Wisold Pajak, Wayne, N.J., assignors to Auto Comp Devices Inc., Lynbrook, N.J.

Filed Dec. 29, 1971, Ser. No. 213,606
Int. Cl. B67d *5/08*
U.S. Cl. 222—70 8 Claims

An adapter is provided for use in combination with an aerosol can for installation in an automatic aerosol dispenser unit. The adapter snaps into the top of an aerosol container can and is provided with a cam-like flange having slots to cooperate with and lock into a receiving member of an aerosol dispensing unit.

The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured



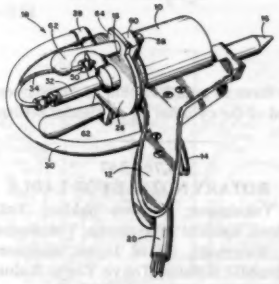
by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,764,045

HOT MELT ADHESIVE GUN

Robert L. Ornsteen, Cape Neddick, Maine, assignors to Ornsteen Chemicals and Textiles Co., Inc., Seabrook, N.H.

Filed Oct. 10, 1972, Ser. No. 296,272
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HE 8 Claims



A hot melt gun for use with a cartridge of thermoplastic adhesive and in which a bead of melted adhesive is forced out of a gun nozzle by pneumatic action for efficient high volume bonding. The gun includes apparatus preventing blockage of the air supply line which can be caused by the backup of molten adhesive within the gun, while not detracting from overall gun performance.

3,764,046

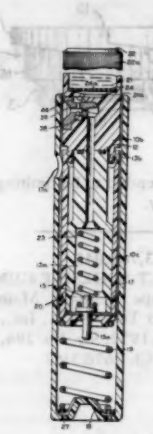
COMPRESSED AIR FLUID PRODUCT DISPENSER

Pasquale R. Riccio, Salem, N.H., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,355
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 10 Claims

A fluid product dispenser has an assembly in the form of a piston, the piston having a compressed air flow path therethrough, a valve member movable in the piston and obturating the compressed air flow path, aspirating means at one end of the compressed air flow path, the other end of the compressed air path opening out of the piston remote from said aspirating means, and a product containing means in the device and a product flow path through the device from the product containing means to the aspirating means. A closed end cylinder is fitted around the piston in air tight sliding engagement with the closed end over the end of the compressed air flow path, so that the cylinder and piston are movable toward each other in a compression stroke to compress air within the cylinder. An extension means on either or both the valve member and the closed end of the cylinder engages the other at the end of the compression stroke for moving the valve member to open the compressed air path only after the air is compressed in the cylinder. The piston has a detachable portion which includes the product container and the aspirat-

ing means. The device also includes a special product flow control diaphragm with a slit therein, and a special air return



means in the form of a gasket held in place over apertures in the closed end of the cylinder by a cylinder return spring.

3,764,047

ROTARY NOZZLE FOR LADLE

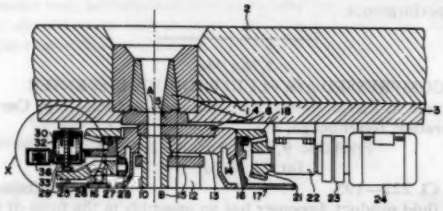
Isao Inoue, Yokohama; Susumu Sekine; Takeshi Hirose, both of Tokyo; Kenichi Matsumoto, Yokohama, and Nobuo Miyagawa, Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha; Tokyo Yogyo Kabushiki Kaisha, and Kokankikai Kogyo Kabushiki Kaisha

Filed Mar. 6, 1972, Ser. No. 232,171

Claims priority, application Japan, Nov. 12, 1971, 46/90367

Int. Cl. B22d *37/00*

U.S. Cl. 222—548 **11 Claims**



A rotary nozzle for a ladle which is comprised of a fixed disc provided at a lower end portion of a nozzle at the bottom of a ladle and a rotor mounting thereon. A sliding disc is provided with a plurality of nozzle bores in surface contact with the lower surface of the fixed disc, and a rotor is provided with lower nozzles communicating with the nozzle bores. A main frame is provided with a releasable stopping mechanism with lever-actuated means for removably attaching the rotor therein. A rotary driving mechanism provides normal and reverse rotation to the rotor. The rotor is freely removable merely by releasing the releasable stopping mechanism to remove the sliding disc, to thereby permit simple replacement of the rotor.

3,764,048

UNDERCARRIAGE CONTAINER

Isaac E. Gore, P. O. Box 1234, Walteria, Calif.

Filed Mar. 24, 1971, Ser. No. 127,721

Int. Cl. B60r *9/02*

U.S. Cl. 224—42.41 **7 Claims**

A container for the underside of a motor vehicle is formed with a panel which is secured to an elongate undercarriage chassis member and extends from the chassis member to the side of the vehicle.

3,764,049

ENVELOPE OPENING METHOD AND APPARATUS

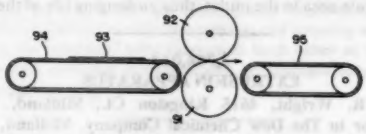
Robert J. Russell, Laurel Springs, and Edwin F. Pierce, Delran, both of N.J., assignors to Kenco Corporation, Cherry Hill, N.J.

Continuation-in-part of Ser. No. 74,060, Sept. 21, 1970, which is a continuation-in-part of Ser. No. 817,619, April 16, 1969.

This application Sept. 22, 1971, Ser. No. 182,619

Int. Cl. B26f *3/02*

U.S. Cl. 225—3 **22 Claims**



A method and apparatus for opening and exposing the contents of an envelope wherein one or more of the side or edge connections of the envelope have been preweakened. The method and apparatus applies a shearing force to the respective panels of the envelope to sever the preweakened edge connections to open and expose the contents. The frictional forces are created by elements which engage the opposite sides of the envelope. The engaging elements may both be moving elements or one of them may be static.

3,764,050

DIFFERENTIAL DRIVE FOR TENSION ROLLERS

Anthony Philip Clark, Oakville, Ontario, Canada, assignor to B & K Machining International Limited, Malton, Ontario, Canada

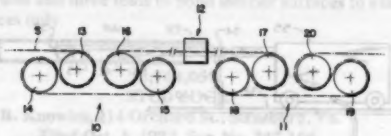
Filed Feb. 16, 1972, Ser. No. 226,739

Int. Cl. B65h *25/00*

U.S. Cl. 226—25 **12 Claims**

A drive for tension rolls incorporating differential gear systems for all rolls but one in any one bridle, and means for automatically regulating and adjusting the speed and/or torque of each of the differentially driven rolls with reference to a direct coupled roll in the group or bridle which is itself driven at a predetermined reference speed corresponding to the speed of the sheet metal itself. Preferably, in accordance with the practice of the invention the speed of each differentially driven roll is itself controlled by a sensor mounted on the drive shaft of the roll immediately preceding it or immediately following it in the roll train. Such a sensor may take the form of a straight forward tachometer, or may be in the form of a torque strain sensor. In this way, the speed of rota-

tion and/or torque of each of the rolls in each of the bridles is controlled and synchronized with the speed of the sheet metal



as it moves in unison with that particular roll, thereby minimizing and substantially eliminating any possibility of slippage between the roll and the sheet metal.

3,764,051

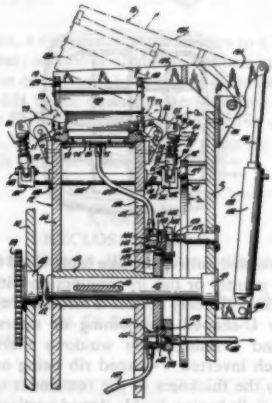
APPARATUS FOR CLAMPING SHEET MATERIAL TO A ROTARY DRUM

Albert A. Pinto, White Plains, N.Y., and Arthur J. Grinner, Wyckoff, N.J., assignors to Nabisco, Inc., New York, N.Y.

Division of Ser. No. 96,568, Dec. 9, 1970. This application June 29, 1972, Ser. No. 267,418

Int. Cl. B65h 17/22

U.S. Cl. 226—152 **3 Claims**



A machine for forming thin plastic packaging trays of dished configuration with an upper peripheral edge which lies within a single plane. The machine includes a plurality of flat faced vacuum form molds carried on the periphery of a rotating drum. A ribbon of plastic material is continuously delivered to the drum and mechanically clamped to the surface of each mold in consecutive order as the drum rotates. Each section of clamped ribbon is carried past a radiant heater and a vacuum is then applied to draw the softened plastic into the mold. The clamps are disengaged and the trays are held in the molds by a continued application of vacuum while a heated blade moving in a repetitive closed curvilinear path severs the ribbon between adjacent trays and while a pair of rotating knives trim the edges of the trays. A vacuum operated picker removes the trays from the drum and deposits them on a conveyor.

3,764,052

PRESSURE ROLL ASSEMBLY FOR TAPE RECORDING AND PLAYBACK EQUIPMENT

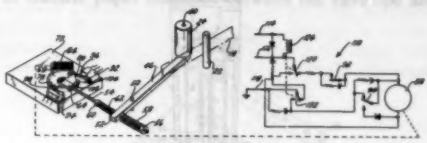
Lawrence J. Scully, Bridgeport, Conn., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Mar. 14, 1972, Ser. No. 234,568

Int. Cl. B65h 17/22

U.S. Cl. 226—176 **14 Claims**

A pressure roll assembly for tape recording and playback equipment to apply a uniform pressure to a pressure roller or pinch roller against a tape drive capstan in order to insure a uniformly constant tape motion for playback and recording. The pinch roller is rotatably mounted on a roller support arm which is pivotably secured intermediate its ends within the



recording apparatus and the pinch roller support arm is pivoted into engagement with a tape drive capstan by a crank pin assembly driven by a motor driven worm gear member thereby to pinch the magnetic tape therebetween.

3,764,053

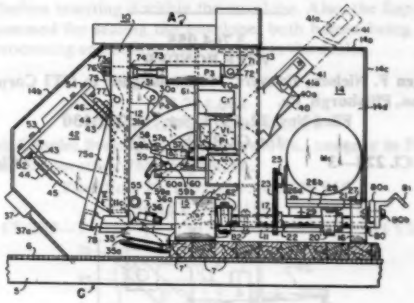
AUTOMATIC NAILING APPARATUS

Elnar T. Thompson, 107 White Gate Rd., Pittsburgh, Pa.

Filed June 23, 1971, Ser. No. 155,891

Int. Cl. B27f 7/02

U.S. Cl. 227—111 **26 Claims**



A machine or apparatus for laying wood floors, particularly in large areas, such as gymnasiums, is provided having a wheeled, frontwardly positioned floor board aligning and nailing unit and a wheeled, aligned, backwardly positioned, guide and position-advancing and setting unit for the nailing unit. The nailing and guide units are adjustably coupled together and actuated in synchronism for back and forth movement along the floor area. The apparatus can be controlled in its operation by manual means, by automatic electric switch control means, by valve means or any combination of such means and is adapted to move back and forth across a room in alignment with a previously laid longitudinally extending run of floor members. A detachable, wheeled control unit is shown for alternative mounting on leading sides of the nailing unit during its back and forth movements along a floor area. Position change and locator means is connected between the nailing and control units to vary their spaced relation as the nailing operations progress. The apparatus can be progressively advanced and set to provide a desired abutting or clearance spaced relationship between adjacent floor board runs; it has a fluid motor operated hammer for assuring a proper nailing positioning of a floor board of a run.

3,764,054

TACK DRIVING DEVICE

Umberto Monacelli, Via Solferino, 31, Udine, Italy

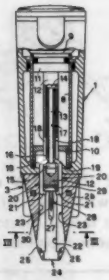
Filed Dec. 20, 1971, Ser. No. 209,646

Int. Cl. B25c 1/04

U.S. Cl. 227—114 **6 Claims**

A gun for driving tacks or other wide headed nails is disclosed wherein the head of each tack or nail to be driven is en-

gaged by means supported by the percussion pin and mobile therwith along the drive channel, so that during all the nail driving stroke the tack or nail is kept perpendicular to the material to be riveted, these means comprising a pair of



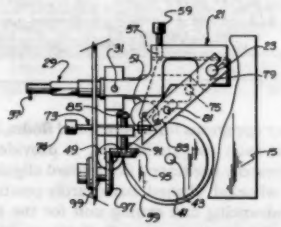
gripping members which are brought into engagement with the head of the nail to be driven and which towards the end of the stroke of the percussion pin and thus of the gripping members themselves, release the head of the nail being driven into the material to be riveted.

3,764,055

WIRE BONDER

Jorgen F. Nielsen, Danvers, Mass., assignor to GTI Corporation, Pittsburgh, Pa.

Filed Nov. 22, 1971, Ser. No. 201,130
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **7 Claims**



A wire bonder comprising a supporting structure, a frame mounted on the supporting structure for pivotal movement about a first pivotal axis, a welder arm for performing a welding operation mounted on the frame for pivotal movement relative thereto about a second pivotal axis, a preprogrammed device for controlling the movement of the frame and the welder arm about the first and second pivotal axes, respectively, and an override device for overriding the predetermined program to alter the movement of the welder arm while permitting the predetermined program to remain as a memory.

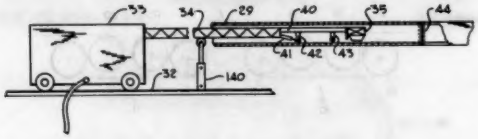
3,764,056

APPARATUS FOR INTERNALLY WELDING PIPE JOINTS

Coy W. Edwards, Holdenville, Okla., and Enos J. Laborde, Jr., Odessa, Tex., assignors to McVean and Barlow, Inc., Odessa, Tex.

Filed Nov. 18, 1971, Ser. No. 200,030
Int. Cl. B23k *19/00*
U.S. Cl. 228—4 **10 Claims**

Method and apparatus for internally welding pipe joints together by telescopingly moving a boom mounted welding head into the interior of the pipe, and into close proximity of the area to be welded. The pipe is rotated while the adjustably fixed welding head of the apparatus applies the bead of welding. The operation is remotely controlled while visual observation of the process is attained by means of a television camera mounted in proximity of the welding head. Provision is made



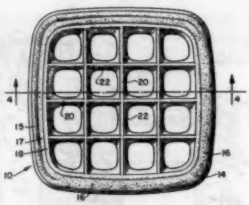
for positioning the welding head relative to the pipe during the welding operation, as well as maintaining an unrestricted line of view between the camera and the area being welded.

3,764,057

HIGH STRENGTH OPEN BOTTOM PACKAGING TRAY

Richard F. Reifers, and Kenneth D. Bixler, both of New York, N.Y., assignors to Diamond International Corporation, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,172
Int. Cl. B65d *1/00, 65/00*
U.S. Cl. 229—2.5 **7 Claims**



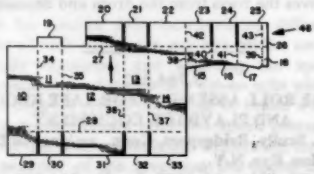
A tray of molded pulp or the like is provided for the packaging of meat, poultry or fish in conjunction with an overwrap transparent film. The tray bottom is formed of a plurality of inverted V or U-shaped ribs joining or intersecting in two directions and defining open windows therebetween, the height of each inverted V-shaped rib being on the order of several times the thickness of the remainder of the tray, the side and end walls having double sloped portions, and the total volume of the inverted V-shaped ribs being approximately equal to the volume of a bottom of an imperforate bottom tray of the same size.

3,764,058

POUR SPOUT CARTON HAVING A HINGED RECLOSABLE LID

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaro Corporation, New York, N.Y.

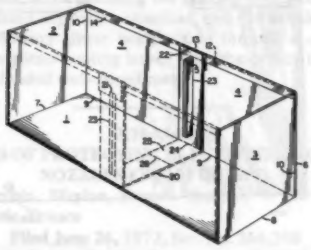
Filed Oct. 1, 1971, Ser. No. 185,766
Int. Cl. B65d *5/74*
U.S. Cl. 229—17 R **4 Claims**



A reclosable pour spout carton is disclosed which may have a grease proof holdout coating on the inside thereof, and which includes a plurality of side and end wall panels, a plurality of top and bottom closure flaps and a hinged cover

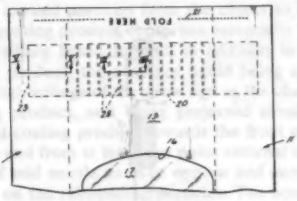
member. The carton blank is secured together along a manufacturers joint located in the central portion of one of the side wall panels and is straight line glued with two unbroken glue applications and three folds to bond interior surfaces to exterior surfaces only.

3,764,059
STUD LOCK
Stewart R. Knowles, 214 Orchard St., Strasburg, Va.
Filed Oct. 3, 1972, Ser. No. 287,106
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 **5 Claims**



This invention, a system of closure, relates to a knock-down box or container, and not only locks the box in an erected, finished position or attitude, but because of its design characteristics also adds to the container performance. Corrugated paper board or fibreboard paper may be used in the manufacture of the box, however, other suitable materials or combination of materials could be used.

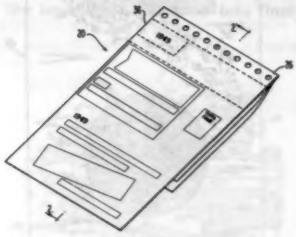
3,764,060
RECLOSABLE BAG
Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation, Chicago, Ill.
Filed June 21, 1971, Ser. No. 154,940
Int. Cl. B65d *33/16*
U.S. Cl. 229—65 **6 Claims**



A paper bag, such as of the gusset type, has a liner, and an elongated strip of metal foil is trapped between the liner bag and the outer bag. The flexible foil has sufficient stiffness to resist bending and extends into the gussets, the liner bag also serving as a window pane for an opening in the outer bag, the configuration of the flexible metal foil strip being such as to augment the resistance to bending of a particular thickness of such strip.

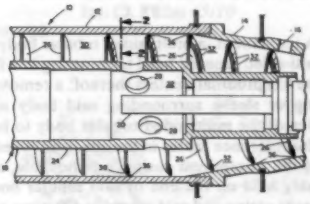
3,764,061
FILM PROCESSING ENVELOPE
Allison G. Hulbert, Edmonton, Alberta, Canada, assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.
Filed July 17, 1972, Ser. No. 272,216
Int. Cl. B65d *27/00*
U.S. Cl. 229—70 **7 Claims**

An envelope for use in the handling and processing of film, having outer plies connected together on three sides to form an envelope pocket, a flap on the open end of the envelope and a removable customer's and dealer's copy attached to the flap and underlying the envelope. Customer and film identification information is placed on the outer surface of the envelope and transferred to the underlying copy by means of a sheet of transfer paper disclosed between the envelope and



the copy. A gummed tab, having identification indicia thereon corresponding to identification indicia provided on the envelope and on the copy, may be removably attached to the flap before inserting it within the envelope. Also, the flap may be gummed for sealing the envelope, both before being sent for processing and before it is returned to the dealer.

3,764,062
CENTRIFUGE APPARATUS
Frank Charles Brautigam, Bryn Mawr, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Feb. 28, 1972, Ser. No. 229,965
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 **11 Claims**

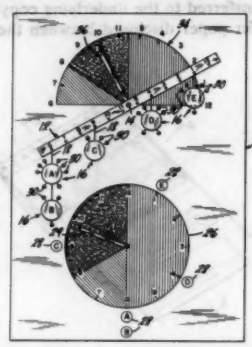


A helical screw conveyor of a centrifuge is provided with wear-resistant surfacing comprising a pre-formed backing tile of the same material as the conveyor, sub-assembled with a wear-resistant member and welded to said conveyor.

3,764,063
COMPUTER AND DISPLAY DEVICE
Martin Siegel, 26 Cambridge Rd., Bloomfield, N.J.
Filed Apr. 18, 1972, Ser. No. 245,229
Int. Cl. G06c *1/00*
U.S. Cl. 235—61 E **5 Claims**

A device for visually and mechanically representing variable information about a group of items and for computing from such information and visually displaying an aggregate result for all items of the group comprises a panel member and a balance arm mounted on the panel member for rotation about an axis. A multiplicity of display components, each of which has a physical weight indicative of a first element of variable information about one of said group of items, is supported on the balance arm. The position of each of the display

components on the balance arm is indicative of a second element of variable information about the component. The orientation of the balance arm indicates an aggregate result that is a



weighted average for all of the items of a function of the product of the first element of information multiplied by the second element of information for each item of the group.

3,764,064

GRAPH IMPLEMENT

Alonzo F. Gaidos, and Angela G. Gaidos, both of 110 Oak Rim Ct., Apt. 11, Los Gatos, Calif.

Filed Nov. 15, 1972, Ser. No. 306,518

Int. Cl. G06c ; G09f ; B43k

U.S. Cl. 235—70 D **7 Claims**

In a graph implement, a multi-sided tubular body having an enlarged multi-sided tapered head terminating in a frustrum of a cone on the longitudinal centers thereof; a removable transparent casing or sleeve surrounding said body and spaced from the sides of the multi-sided tubular body to hold inserts bearing useful reference tables in the space between the tubular body and the transparent casing; a removable, multi-sided cap detachably held on the end of said tubular body to hold said transparent casing and said inserts in position; an aperture through the longitudinal center of the cap registering with the cavity of said tubular body for insertion and releasable retention of a ballpoint pen or pencil writing implement so that the writing end of said implement emerges through the tip of the enlarged tapered head; the multi-sided tapered head, the multi-sided transparent casing, and the multi-sided securing cap having the same sides in registry so that the corners thereof may be utilized as rulers for drawing when the graph implement is removed for that purpose.

3,764,065

AREA DIALING DEVICE

George W. Plumly, Fort Worth, Tex., assignor to Smith Brothers Properties, Fort Worth, Tex.

Filed June 21, 1972, Ser. No. 264,734

Int. Cl. G06c *3/00*

U.S. Cl. 235—88 **5 Claims**

An area dialing device for quickly and accurately determining the area in square yards of carpeting or other types of floor covering required to be cut from conventional width rolls to facilitate calculation of the cost of the floor covering required for a given room or area. The device has a rotatable back plate with area values imposed thereon as well as variable dimensional numbers to be dialed for presenting the sought-after

areas in positions to be viewed within apertures formed in a face plate.

3,764,066

CONCRETE RAILROAD TIE PRODUCT

Edward L. Kowell, Greenbrae, Calif., assignor to J. H. Pomeroy & Company, Inc., San Francisco, Calif.

Division of Ser. No. 82,638, Oct. 21, 1970, Pat. No. 3,685,782, which is a division of Ser. No. 716,516, March 27, 1968, Pat. No. 3,557,274. This application June 26, 1972, Ser. No. 266,429

Int. Cl. E01b *3/32*

U.S. Cl. 238—84 **5 Claims**

An improved concrete product formed with an attachment device of a type having female threads adapted to cooperate with the threaded ends of bolts or the like inserted thereto. The threads are continuously protected by a sealed plug until ready for use. The interior of the plug serves further the purpose of readily releasing the precast body of concrete from its pouring form. Thus, when the product is ready for use, it is a simple matter to merely drive a screwdriver into the plastic sleeve and unscrew same from insert 17.

3,764,067

METHOD FOR DECORATING SURFACES

Charles A. Coffey, and Michael J. Catena, both of Tampa, Fla., assignors to Harris Paint Company, Tampa, Fla.

Continuation-in-part of Ser. No. 44,590, June 8, 1970, abandoned. This application Jan. 26, 1972, Ser. No. 221,033
Int. Cl. B44d *1/08*; B65d *83/14*
U.S. Cl. 239—1 16 Claims

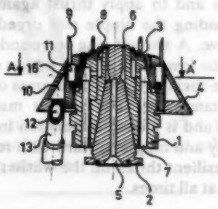
A glitter coating composition is applied from a manually-operated aerosol spray can by spraying a glitter coating composition comprising solid, highly reflectant, non-leafing polymer-coated metal flakes, a vehicle system therefor, and a propellant by the steps of (1) flowing the glitter coating composition through a passageway of substantially uniform cross-sectional area, (2) expanding the flowing glitter composition in an elongated expansion chamber, and (3) accelerating the expanded flowing glitter composition through a constricted orifice. The glitter coating issues from the orifice in the form of a finely-divided well-mixed spray.

3,764,068

METHOD OF PROTECTING ELECTROSTATIC SPRAY NOZZLES FROM FOULING

Adrien Lacchia, Meylan, France, assignor to Air Industrie, Courbevoie, France

Filed June 26, 1972, Ser. No. 266,398
Claims priority, application France, Aug. 2, 1971, 7128515
Int. Cl. B05b *5/00*
U.S. Cl. 239—3 10 Claims



A method of protection of electrostatic projection nozzles against fouling due to the rebounding of a small proportion of the projected ionized particles from the object to be coated with a liquid-coating product comprises essentially the provision of an auxiliary liquid product in addition to the main liquid coating product, the auxiliary liquid being electrically charged to a high voltage of the same sign as the charge of the liquid coating product, and being projected simultaneously with the liquid-coating product towards the front of the projection nozzle and from at least one point external to the central portion of said nozzle so as to oppose and annul the opposite charge on the rebounding particles. The nozzle is provided on its periphery with a plurality of needles formed by fine, hollow tubes with bevelled free extremities which are charged to the electric potential of the same sign as that of the projection nozzle.

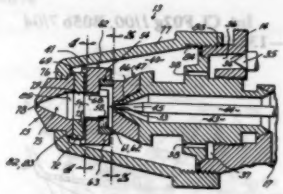
3,764,069

METHOD AND APPARATUS FOR SPRAYING

Peter W. Runstadler, Jr., Hanover, N.H.; Eric T. Nord, Oberlin; Donald R. Hastings; Don R. Scarbrough, both of Elyria, and Frederick R. Wilhelm, Avon Lake, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed July 30, 1971, Ser. No. 167,701
Int. Cl. B05b *7/04*, *1/06*
U.S. Cl. 239—8 43 Claims

A method and apparatus for atomizing and spraying liquids such as fuel, paint or water in the form of minute droplets utilizing a small amount of air to provide the atomizing force. The liquid under a pressure of from 30–100 psi is caused to flow in a thin film. Streams of gas at a slightly higher pressure are impinged against the liquid film so that the gas is sheared into microbubbles which are entrained in the liquid to form a froth in which the liquid is the continuous phase, and in which the air to liquid mass ratio is from 0.1 to 1.6. The froth flows through a space in which the pressure decreases as the froth moves toward a nozzle. During this flow the froth becomes homogeneous. The froth is discharged through a nozzle whereupon the air bubbles explode rupturing the liquid film and causing the liquid to disintegrate into finely atomized drops.



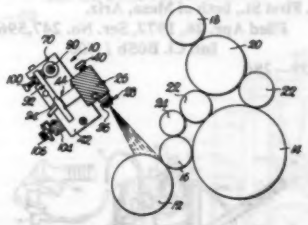
The apparatus for carrying out this method comprises a liquid film-forming channel connected to a liquid inlet line supplied with liquid under pressure, an air injection channel terminating adjacent to the liquid flow channel, a flow space interconnecting the liquid film channel and a nozzle orifice. In the preferred embodiment the film-forming channel is annular with air being injected from the outside of the channel. In a modification the liquid film-forming channel is planar with air being injected into the film from one or both sides of the channel.

3,764,070

DAMPENING FLUID PUMP AND METERING APPARATUS FOR OFFSET PRINTING PRESS

Donald A. Glaser, Emporia, Kans., assignor to Didde-Glaser, Inc., Emporia, Kans.

Filed July 3, 1972, Ser. No. 268,735
Int. Cl. F02m *45/10*
U.S. Cl. 239—93 25 Claims



Dampening fluid is successively pumped in metered, very small individual volumes by a series of pump units to sprayers which nebulize the fluid and discharge the same onto a roll of an offset printing press. Each pump unit has as its primary component a relatively small, resilient, tubular element which positively displaces a predetermined volume of fluid to its sprayer during each operating cycle by successively constricting and expanding its flow passage when a compressive force is applied and relaxed to the element in the direction of fluid flow therethrough. A bubble-releasing and guiding channel in each element is open along its length to the flow passage of the element and has an entry at the inlet end of the element configured to avoid the formation of a ledge or the like upon which bubbles could collect and thereby expand and contract during operation of the element to appreciably affect the volume of fluid displaced by the element. Individual lever arm control assemblies for the pumping elements of the units are

provided with adjustable limit stops to permit metering of the fluid from each element independently of all others.

3,764,071

GAS TURBINE ENGINE COMBUSTION APPARATUS

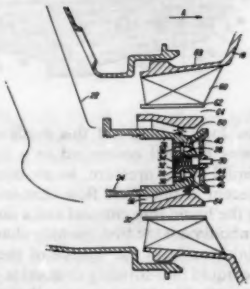
Richard Carlisle, Risley, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 31, 1972, Ser. No. 221,952

Claims priority, application Great Britain, Feb. 2, 1971, 3,657/71

Int. Cl. F02g *1/00*; B05b *7/04*

U.S. Cl. 239—132.5 7 Claims



A fuel burner assembly for a gas turbine engine has a number of main fuel ducts each one of which opens cut into an annular duct which surrounds the main fuel nozzle. Air is arranged to flow through the annular duct and completely atomise the main fuel flow and this is particularly the case at low fuel flows when it is sometimes difficult to ensure that complete atomisation takes place.

3,764,072

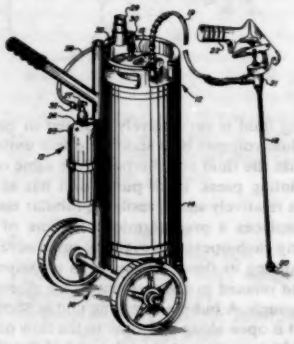
SPRAY TANK

John H. Morehouse, 2723 E. First St., and John B. Morehouse, 2704 E. First St., both of Mesa, Ariz.

Filed Apr. 26, 1972, Ser. No. 247,596

Int. Cl. B05b *11/00*

U.S. Cl. 239—286 3 Claims



A lightweight, portable chemical spraying device embodying a spray tank filled with liquid chemicals charged by a propane gas tank or the like at a predetermined pressure by a pressure regulator.

3,764,073

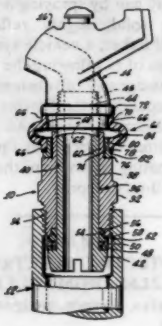
SPRINKLER HEAD MOUNTING MEANS

Robert B. Costa, Covina; William J. Wichman, Glendora, and Norman D. Morgan, Pasadena, all of Calif., assignors to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed Apr. 17, 1972, Ser. No. 244,827

Int. Cl. B05b *3/06*

U.S. Cl. 239—230 7 Claims



Mounting means comprises three major components, an upright sleeve fastened to a conduit member, a nipple rotatable within the sleeve, and a body secured to the top of the nipple and carrying the sprinkler head. The lower end of the nipple has an enlarged shoulder to prevent upward separation from the sleeve and to apply thrust against a set of sealing washers surrounding the nipple and urged against the lower end of the sleeve. A shroud ring surrounds the upper end of the sleeve and the lower end of the body to completely enclose the gap between them and prevent ingress of abrasive particles and other contaminants. The ring is made of imperforate elastic material and is placed in position in axial compression to urge the body and nipple upward with respect to the sleeve and maintain resilient thrust on the washers and keep them in sealing contact at all times.

3,764,074

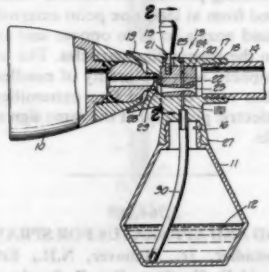
SHOWER HEAD AND LIQUID AGENT DISPENSING ATTACHMENT

Donald R. James, 2517 E. Vine Ave., West Covina, Calif.

Filed Jan. 20, 1972, Ser. No. 219,337

Int. Cl. B05b *7/30*

U.S. Cl. 239—318 5 Claims



Valving apparatus interconnects a source of pressurized liquid and a spray dispenser having a single control positionable from one extreme, at which just the pressurized liquid is provided, to another extreme at which a mixture of the first liquid and liquid agent are provided, the liquid agent container also being interconnected with the valving apparatus. The valving apparatus includes an element having a pair of separate, axially extending channels which channels are in

direct communication with the pressurized liquid. A smaller transverse orifice in the valving element, one end of which extends to the liquid agent, and the other end to the air, acts as a suction powered liquid agent inlet as pressurized water moves through the channel. The exit ends of the valving element channels are adjusted relative to an apertured plate from one extreme position in which both channels are open and in direct communication with the spray dispenser, to a further extreme in which the dispenser interconnects with both the pressurized water and liquid agent channels.

3,764,075
FIRE FIGHTING TURRET

John P. Gagliardo, Auburn, Mass., assignor to Feecon Corporation, Auburn, Mass.

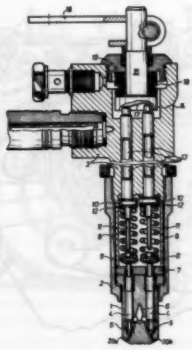
Filed May 24, 1972, Ser. No. 256,419
Int. Cl. B05b *1/16*
U.S. Cl. 239—394 **11 Claims**

A fire fighting turret making use of a conical selector system, having openings arranged for the selection of a particular fire fighting medium.

3,764,076
FUEL INJECTION NOZZLE UNIT FOR INTERNAL COMBUSTION ENGINES

Ewald Eblen, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 2, 1972, Ser. No. 231,114
Claims priority, application Germany, Apr. 29, 1971, P 21 21 121.2
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **5 Claims**

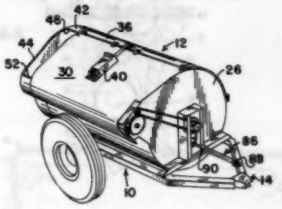


There is described a fuel injection nozzle unit having two valve needles each controlling a separate nozzle opening and each having a stroke that is limited by an associated abutment. The abutments are simultaneously adjustable from the outside of the nozzle unit whereby one or the other valve needle may be rigidly locked in its closed position.

3,764,077
MATERIAL SPREADER WITH ROTARY FLAIL STRUCTURE

Donald A. McCallum, Burlington, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed May 26, 1971, Ser. No. 147,108
Int. Cl. A01c *3/06*
U.S. Cl. 239—674 **13 Claims**

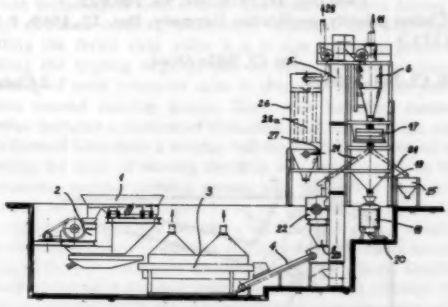


A material spreader adapted for towing behind a tractor for spreading a load of manure onto the ground. The spreader includes a tank-like container in which a rotary flail structure is operative to throw the material laterally over a side thereof. An auger conveyor is disposed along the side of the container in position to receive the material from the flail structure and convey the same rearwardly into a discharge chamber adjacent to the container. The chamber includes a laterally directed discharge opening through which the material is thrown by a rotor disposed within the chamber.

3,764,078
APPARATUS FOR REGENERATING FOUNDRY SAND

Gerard Yves Richard, Precy sur Oise, France, assignor to Societe d'Application de Produits Industriels et Chimiques Sarl Departement Sigma

Filed Nov. 30, 1971, Ser. No. 203,193
Claims priority, application France, Nov. 30, 1970, 7043101
Int. Cl. B02c *19/06*, *21/00*
U.S. Cl. 241—40 **9 Claims**



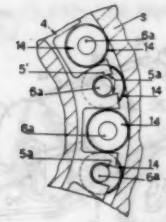
Apparatus for the regeneration of foundry sand, particularly sand coated with irreversible inorganic and/or organic binding agents. The sand molds are broken to free the castings and the lumps of hot sand crushed and cooled to ambient temperature. The grains of sand are then separated from the coating of binder and sieved to obtain a selected range of grain sizes equivalent to that of suitable new foundry sand. Grains of sand of excessive size may be pulverised and returned for reprocessing. Dust is removed from the sand at one or more of the stages of the process where dust is caused to form. Castings recovered from the mold fragments by a magnetic or electronic separator.

3,764,079

ROLLER OR BALL MILL FOR THE REFINING OF COCOA AND CHOCOLATE AND THE GRINDING OF PAINTS, ENAMELS AND THE LIKE

Claudio C. Consoli, Via Neera 39, Milan, Italy

Filed Oct. 29, 1971, Ser. No. 193,648
Claims priority, application Italy, July 10, 1971, 26878 A/71
Int. Cl. B02c *4/04*
U.S. Cl. 241—110 5 Claims



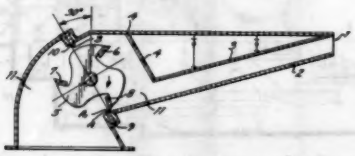
A mill for the refining of cocoa and chocolate and the grinding of paints, enamels and the like which consists of an outer tubular stator and an inner rotor revolvable in the stator. Forks are provided on the outer wall of the rotor for supporting rollers for rotation while permitting the rollers to be urged outwardly when the rotor turns so that the rollers ride on the inner surface of the stator. The rollers as thus supported are arranged in a spiral path along the outer wall of the rotor. The rollers are formed with separate grooves which define spiral ribs running from end to end of the rollers. The corners of the ribs are sharp and are maintained sharp by riding on the inner surface of the stator.

3,764,080

DISINTEGRATION DEVICE FOR SYNTHETIC MATERIAL WASTES, PARTICULARLY WASTES OF ENDLESS DIMENSIONS

Matthias Wagner, Klein-Auheim, Germany, assignor to Moser Stahlbau KG, Klein-Auheim, Germany

Filed Dec. 21, 1970, Ser. No. 100,022
Claims priority, application Germany, Dec. 22, 1969, P 19 64 111.3
Int. Cl. B02c *18/44*
U.S. Cl. 241—186 R 2 Claims



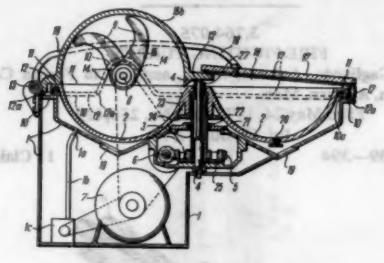
A cutting mill for disintegrating synthetic plastic wastes and the like having a rotor provided with cutting blades that operate against a pair of stationary knives. The rotor is disposed within a disintegrating chamber into which material to be disintegrated is fed through a feeding chute. The lower wall of the feeding chute intersects the lower portion of the rotor.

3,764,081

VACUUM CUTTER

Horst Seydelmann, Verl. Schulstrasse 50, Aalen, 7080, Germany

Filed July 3, 1972, Ser. No. 268,776
Claims priority, application Germany, Nov. 9, 1971, P 21 55 647.8
Int. Cl. B02c *18/14*, *18/16*
U.S. Cl. 241—199.7 11 Claims



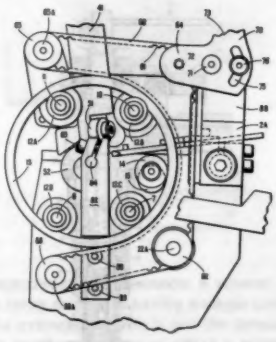
A vacuum cutter, especially for meat, having a stationary lower housing part and an upper cover part pivotably connected to one end of the lower part, an annular pan rotatable within the lower housing part about a vertical axis and having an outer rim overlapping an upwardly projecting ridge on the upper rim of the lower housing part which extends substantially horizontally with the exception of a relatively narrow upward projection through which a horizontal cutter shaft extends from one side of the machine over said pan so that cutter blades mounted on the free end of the cutter shaft are rotatable within a vertical plane through and above one side of the pan, said cover being substantially flat except for a tunnel-like upward projection covering the cutter shaft when the cover is closed and then engaging upon the projection of the lower housing part, said tunnellike projection terminating into a further upwardly projecting hood for covering the blades. The parts of the housing in which the pan is located are designed so as to have a very small volume which may be easily evacuated.

3,764,082

TOROIDAL HEAD WINDING MACHINE

Kenneth P. Gorman, 1645 Superior Ave., Newport Beach, Calif.

Filed Apr. 7, 1971, Ser. No. 131,935
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 B 11 Claims



A toroidal core winding machine having an annular shuttle with a shuttle plate positioned adjacent to the shuttle and having an arcuate periphery extending radially outward of the

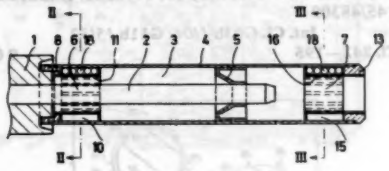
periphery along the portion thereof. An elongated wire-engaging endless belt extends laterally on either side of the plane of the shuttle about the rear portion of the shuttle and is supported to move with the shuttle. The shuttle and belt are independently but synchronously driven.

3,764,083

BALANCED MOUNTABLE PACKAGE TUBE AND METHOD OF MAKING SAME

Albert Gretener, Zug, Switzerland, assignor to Gretener Ltd., Cham, Switzerland

Filed July 12, 1972, Ser. No. 270,888
Int. Cl. B65h *75/30*
U.S. Cl. 242—46.21 6 Claims



A balanced package tube is provided by initially positioning the coupling element and closure element so that a limited access opening is provided for the longitudinally extending circumferentially spaced recesses in each. After determining the unbalance, the weight bodies are inserted in the appropriate recesses and the access openings closed either by moving the whole element into the hollow body or by moving a hub relative to the recess-defining insert.

3,764,084

PINCH ROLLER FOR ENDLESS TAPE CARTRIDGE

Tsunehiro Tsukagoshi, Tokyo, Japan, assignor to Mondo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1971, Ser. No. 189,278
Claims priority, application Japan, Oct. 15, 1970, 45/101838
Int. Cl. B65h *17/48, 17/20*
U.S. Cl. 242—55.19 A 6 Claims

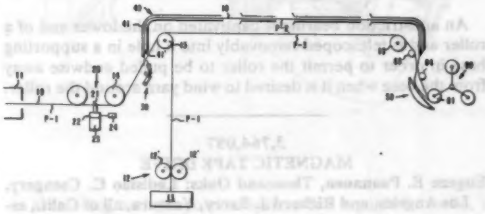
A tape cartridge has a pinch roller with a dual surface. One surface is driven by a capstan of a tape player, while the other surface of smaller diameter drives the tape. A notch in the side housing of the tape cartridge permits a retention roller to bias a spring biased arm that carries an auxiliary roller into a play position where the tape is biased against the pinch roller.

3,764,085

METHOD OF AND APPARATUS FOR HANDLING MATERIAL

William E. Hawkins, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1971, Ser. No. 172,307
Int. Cl. B65h *19/26*
U.S. Cl. 242—56.6 15 Claims



A material handling method including a method of threading a strip of material, such as plastic film, into a pneumatic moving means including the steps of moving a web of film from a supply source along a first path by first moving means; slitting the web as it moves in the first path to form a leader strip; moving the strip in the first path by the first moving means and into operative relationship with a pneumatic moving means threadup device; thrusting the leader strip into threadup position with respect to a pneumatic second moving means including at least a strip first transport tube having a strip entrance opening positioned adjacent the first path; cutting the thrust strip while it is in this threadup position; pulling the leading edge of the cut strip into the entrance opening of such transport tube to thread it into such pneumatic second moving means. Such web handling method further includes a method of threading such strip and the web it is formed from onto a windup roll for winding thereupon including the steps of moving the strip in a second path by the pneumatic second moving means and through a strip exit opening of a strip transport tube of the pneumatic second moving means and into operative relationship with a windup roll threadup device consisting of a curved guide chute having spaced flexible members connected thereto, such flexible members being in contact with the surface of a windup roll and air currents from the exit opening of such transport tube passing along the chute surface, through the spacings of the flexible members and adjacent the roll surface to guide, pneumatically and mechanically, the leading edge of the strip into threadup position with respect to the windup roll and into contact with the surface of such windup roll; connecting the leading edge of the strip to the windup roll; pulling the strip from the transport tube or tubes through a slot therein and into a third path defined by process rolls; expanding the strip to form the full width web; moving the full width web in the third path; and, winding such web onto the windup roll.

Apparatus is provided for performing the above described method.

3,764,086

YARN HOLDER

Henry L. Garzonio, 449 Bucklin St., La Salle, Ill.

Filed June 15, 1972, Ser. No. 263,253

Int. Cl. B65h *49/02*; D03j *5/08*

U.S. Cl. 242—130 **2 Claims**

An anti-friction bearing is captivated on the lower end of a roller and is telescoped removably into a hole in a supporting base in order to permit the roller to be pulled endwise away from the base when it is desired to wind yarn around the roller.

3,764,087

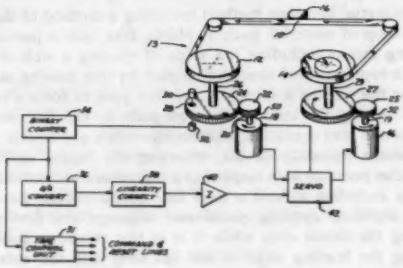
MAGNETIC TAPE DRIVE

Eugene E. Paananen, Thousand Oaks; Ladislao C. Csengery, Los Angeles, and Richard J. Barry, Ventura, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 53,404, June 9, 1970, abandoned. This application June 11, 1971, Ser. No. 152,290

Int. Cl. B65h *25/10*, *25/28*; G11b *15/46*

U.S. Cl. 242—186 **4 Claims**



Apparatus is disclosed for maintaining, at a constant preselected value, the velocity at which a magnetic tape moves from a supply reel, past an electromagnetic read or write head, and onto a take-up reel during motorized rotation of one of the reels. A motor rotates one of the reels. A motor control applies a motor control signal to the motor and comprises apparatus for causing the motor control signal to have a non-linear component which is inversely proportional to the diameter of the tape on one of the reels. The non-linear signal component causes the motor to rotate the reel at a velocity inversely proportional to increasing tape diameter and thereby maintain a substantially constant linear velocity of tape.

Preferably, the apparatus for causing the non-linear signal component comprises a sensing apparatus providing a series of signals, the accumulated number of which is indicative of the number of revolutions of one of the reels as tape passes between reels. A counter counts the series of signals and forms a representative digital output signal. A digital to analog converter converts the digital signal to an analog signal. A circuit is connected to the converter which modifies the analog signal and forms the above-defined non-linear signal component. Also, preferably apparatus is provided for causing another signal component in the motor control signal which is inversely proportional to angular velocity of the driven reel so as to maintain the angular velocity of the reel constant for a given value of non-linear signal.

3,764,088

AUTOMATIC TAPE LOADING TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS

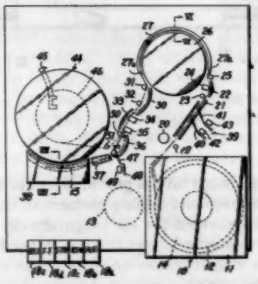
Hisayoshi Yamada; Kyohei Nakada, both of Kanagawa-ku, Yokohama-city; Yukio Seta, Adachi-ku, Tokyo, and Masakatsu Kai, Seya-ku, Yokohama-city, Kanagawa-ken, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama City, Japan

Filed May 6, 1971, Ser. No. 140,893

Claims priority, application Japan, May 18, 1970, 45/41638; June 12, 1970, 45/50268; May 9, 1970, 45/44675; May 18, 1970, 45/47794; May 18, 1970, 45/47795; May 19, 1970, 45/48309

Int. Cl. G03b *1/04*; G11b *15/32*

U.S. Cl. 242—195 **9 Claims**



An automatic tape loading type magnetic recording and reproducing apparatus comprises means for detecting a feeding of a predetermined length of tape leader from a supply reel and then for stopping the feeding, an automatic take-up reel for automatically engaging and winding the fed-out tape leader, and means for detecting when the tape leader has been engaged and wound by the automatic take-up reel and then for positively driving the tape. The automatic take-up reel has an engaging pawl which engages the tape leader outside of the reel flanges.

3,764,089

RECORDING AND REPRODUCING APPARATUS USING MAGNETIC CASSETTE

Kenji Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 10, 1971, Ser. No. 179,505

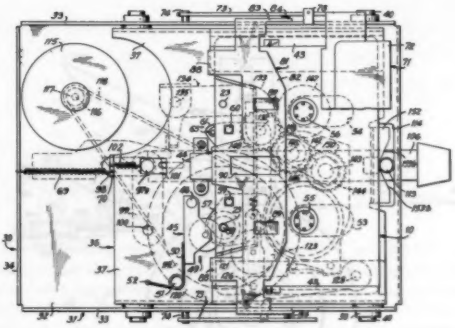
Claims priority, application Japan, Sept. 11, 1970, 45/80223; Dec. 11, 1970, 45/110277

Int. Cl. G03b *1/04*; G11b *15/32*, *23/04*

U.S. Cl. 242—198 **13 Claims**

An apparatus for recording and/or reproducing signals on a magnetic tape contained in a cassette has a chassis with a tape drive, such as, a capstan and take-up and supply reel driving shafts, engageable with a cassette from below the latter, a movable frame mounted on the chassis for movement relative to the latter in a substantially inclined path that extends downwardly and towards the front of the chassis from an elevated position to a lowered operative position, cassette holding guides on the frame opening at the front of the latter for slidably receiving a cassette above the tape drive when the frame is in its elevated position, cassette locating elements on the chassis engageable with a cassette in the guides with the frame in its elevated position to locate the cassette in vertical registry with the tape drive and constraining the cassette to

move vertically downward into engagement with the tape drive upon shifting of the frame in the inclined path to its lowered operative position, and a magnetic head on the frame spaced rearwardly from a cassette in the guides when the frame is in its elevated position and being engaged with the tape in the cassette upon shifting of the frame to the lowered position. The apparatus further has a single control lever by which a latch holding the frame in its lowered operative posi-



tion may be released for return of the frame to its elevated position with automatic ejection of the cassette from the holding guides, and also by which the operating mode of the tape drive may be selected among normal forward drive, fast forward drive and rewind drive. There is also provided a device whereby a cassette is automatically ejected from the holding guides in the event that the cassette is incorrectly inserted therein.

3,764,090

THREAD LAYING MECHANISM FOR PRECISION WINDING OF PINEAPPLE BOBBINS

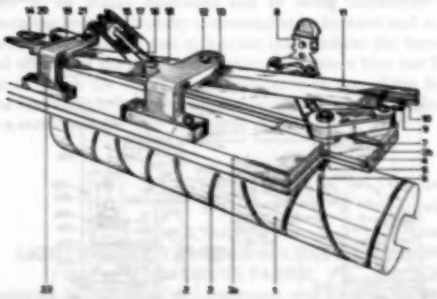
Robert Gerber, Horgen, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed June 15, 1972, Ser. No. 262,993

Claims priority, application Switzerland, June 30, 1971, 9639/71

Int. Cl. B65h *54/32*

U.S. Cl. 242—43.1 **3 Claims**



A slider on a movable adjusting guide bar to reduce the traverse distance of the yarn guide as the diameter of the bobbin increases, cooperates with a slider in a fixed track driven by a grooved roll. To prevent undesired jarring upon reversal of traverse direction, a damping device, e.g., a cylinder and piston damping arrangement is provided, one end thereof being fixed and the other end linked to a point of the adjusting guide bar.

3,764,091

IMPROVEMENTS IN OR RELATING TO CONTROL SYSTEMS

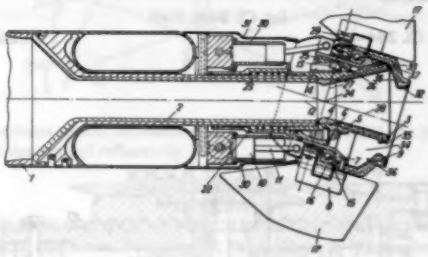
James Arthur Crowhurst, St. Albans, England, assignor to Hawker Siddeley Dynamics Limited, Hatfield, England

Filed Apr. 30, 1971, Ser. No. 141,364

Claims priority, application Great Britain, Apr. 30, 1970, 3,225/70

Int. Cl. F41g *7/00*; F42b *15/16*

U.S. Cl. 244—3.22 **11 Claims**



A steering and propulsion system for a guided missile, in which thrust vectoring of the propulsive effluent is achieved by means of a dirigible tail nozzle. The dirigible nozzle is mounted on a spherical bearing to swivel about a point lying at the centre of the throat of a fixed convergent/divergent inner nozzle disposed within the dirigible nozzle. Aft of the swivel point, the dirigible nozzle has a convergent portion leading to a divergent mouth, and the inner wall of the convergent portion is formed as a domed annular surface which is part-spherical and has its geometrical centre at the swivel point. This dome annular surface is a close running fit against the peripheral rim of the exit of the fixed inner nozzle. A set of free-spinning fins are mounted along with the dirigible nozzle so as to deflect angularly therewith.

3,764,092

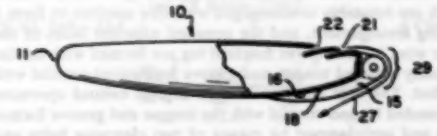
CIRCULATION CONTROL AIRFOIL SYSTEM

Robert M. Williams, Chantilly, Va., and Richard D. Murphy, Bethesda, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 7, 1970, Ser. No. 95,648

Int. Cl. B64c *3/44*

U.S. Cl. 244—42 CD **12 Claims**



A lifting airfoil has the capability of exhibiting a coanda profile, or blunt trailing edge for low speed landings capability, and a blown flap or jet flap for high speed transonic operation. The airfoil may be a supercritical type employing a flap which can be rotated to combine with the airfoil to produce a coanda profile or which can be used as a blown flap at transonic speeds when combined with a high velocity blowing

jet over the flap. In addition, the supercritical airfoil can include a slot in the underside of the foil for blowing a jet flap in lieu of the blown flap.

3,764,093

AIRCRAFT HAVING VARIABLE SWEEP-BACK WINGS

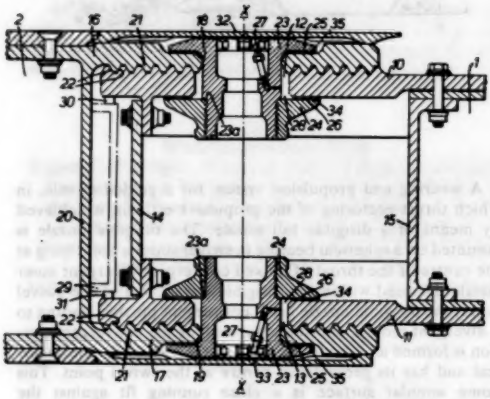
James Paul Richardson, Lytham, England, assignor to British Aircraft Corporation Limited, London, England

Filed Mar. 3, 1970, Ser. No. 24,413

Claims priority, application Great Britain, Mar. 7, 1969, 12,301/69

Int. Cl. B64c *3/40*

U.S. Cl. 244—46 **6 Claims**



A wing pivot assembly for an aircraft having variable-sweep-back wings which comprises a pair of vertically-spaced lugs secured to a wing and a cooperating pair of vertically-spaced lugs secured to the fuselage structure of the aircraft, the fuselage lugs lying inside and close to the wing lugs. The opposed adjacent faces of the upper wing lug and fuselage lug are formed with coaxial annular tongue and groove formations which are rotatably interengaged with one another to form a bearing arrangement, and the opposed adjacent faces of the lower wing lug and lower fuselage lug are formed with similar rotatably engaged tongue and groove formations coaxial with the first. The lugs are formed with aligned central apertures surrounded by and coaxial with the tongue and groove formations and are clamped by means of two clamping bolts and nuts whereof the one clamping bolt is passed through the central apertures of the upper wing lug and upper fuselage lug and clamps the two together, whilst the other clamping bolt extends through the central apertures of the lower wing nut and the lower fuselage nut and clamps the two together. The tongue and groove formations are of V-section having flat crests and flat bottoms respectively, and means is provided for introducing lubricant between the cooperating tongue and groove formations via conduits in the associated clamping bolts.

3,764,094

MOTOR POWERED WHEELS FOR AIRCRAFT

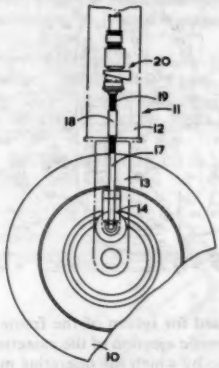
Ronald William Cross, Hemel Hempstead, England, assignor to Rotax Limited, Birmingham, England

Filed Dec. 7, 1971, Ser. No. 205,662

Claims priority, application Great Britain, Dec. 23, 1970, 61,079/70

Int. Cl. B64c *25/02*

U.S. Cl. 244—50 **6 Claims**



A ground propulsion system for an aircraft includes a compressor driven by one of the main engines of the aircraft or an auxiliary engine, a turbine driven by the gaseous fluid supplied by the compressor and means including a gearbox coupling the turbine to a wheel of the aircraft.

3,764,095

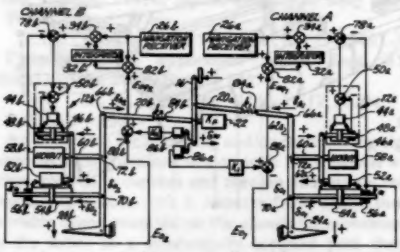
MULTICHANNEL AUTOPILOT WITH EQUALIZATION MEANS FOR A RESILIENT CONTROL SYSTEM

Robert E. Schenbeck, Los Angeles, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 47,741, June 19, 1970, Pat. No. 3,698,665. This application Apr. 14, 1972, Ser. No. 243,955

Int. Cl. B63c *13/42*; **B64c** *13/50*

U.S. Cl. 244—77 M **7 Claims**



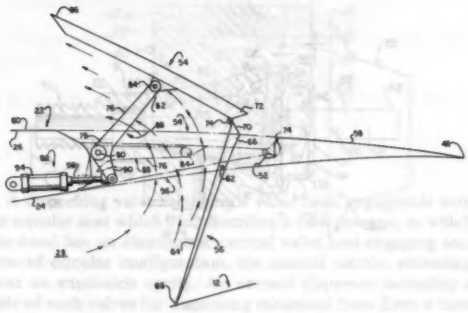
A multichannel automatic flight control system (AFCS) with equalization means for interfacing the two or more relatively independent channels thereof including means to sense relative imbalance between the channels and/or to sense inoperativeness in one of the channels.

3,764,096

THRUST REVERSING APPARATUS

Wallace Wright, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Feb. 24, 1972, Ser. No. 229,046
Int. Cl. B64d *29/00*
U.S. Cl. 244—110 B 5 Claims



Jet engine includes elongate streamlined shroud and a central body located substantially coaxially within at least the aft portion of the shroud to define between them a generally annular duct for rearward flow of a propulsion gas stream. The shroud may be the casing surrounding the engine, and the central body may be the "bullet" or center body aft of the turbine to define the profile of the discharge throat. In a fan type engine, the central body is the casing for the engine itself and the shroud is radially spaced from the casing to form a fan air duct. The reverser includes peripherally arranged outflow passage means extending through shroud wall forward of its trailing edge. A plurality of sets of control doors are peripherally arranged in the passage means and each set includes a blocker door and a deflector door. In preferred form, each blocker door is pivoted forward of its aft end to the shroud to swing in and contact central body, and each deflector door is pivoted at its aft end to the aft end of the blocker door to be bodily displaced and to swing outwardly. An operating lever is pivotally connected at its forward end to the shroud and at its aft end to a point intermediate the forward and aft end of the deflector door to complete a four bar linkage in which the doors themselves serve as two of the links. The operating lever is formed as a bell crank which is actuated by a servo motor.

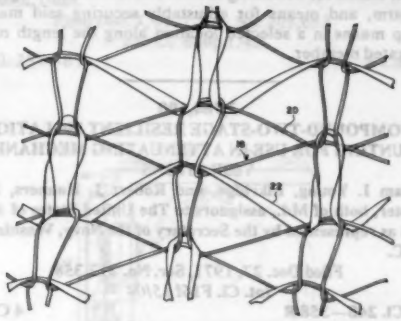
3,764,097

LIGHTWEIGHT, VARIABLE SOLIDITY KNITTED PARACHUTE FABRIC

Frederick R. Matthews, Jr., Poquoson, and Erskine C. White, Newport News, both of Va., assignors to The United States of America as represented by the National Aeronautics and Space Administration

Filed Dec. 23, 1971, Ser. No. 211,332
Int. Cl. B64d *17/02*
U.S. Cl. 244—145 10 Claims

A decelerator particularly adapted for high altitude, low atmospheric density operation includes a canopy constructed of a circular knitted fabric including ribbon-like yarns which are twisted to provide air deflection and hence, resultant drag. A radar reflective version of the fabric is preferably knitted of a combination of nylon filaments and metallized polyester tapes



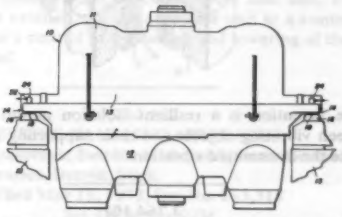
or ribbons which, in addition to serving in deflecting air, provide the desired reflectivity.

3,764,098

TURBINE WITH LOAD FORCE DETERMINING DEVICE

John D. Dickinson, Swarthmore, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 16, 1971, Ser. No. 115,194
Int. Cl. F16m *13/00*
U.S. Cl. 248—2 7 Claims



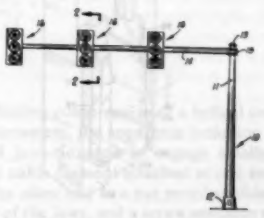
The weight loading distribution of a turbine assembly upon respective supporting pedestals is determined to facilitate the adjustment of the loading to conform to the design value. A load determining device for use in combination with the turbine installation is set forth, as well as a method of achieving the design loadings.

3,764,099

SIGNAL MASTARM BRACKET

Alfred P. Parduhn, Rt. 2, Box 33, Oklahoma City, Okla.

Filed Mar. 2, 1972, Ser. No. 231,131. The portion of the term of this patent subsequent to June 22, 1988, has been disclaimed.
Int. Cl. F16m *13/02*
U.S. Cl. 248—214 6 Claims



A universal mastarm bracket for mounting traffic signal lights or the like on mastarms, the bracket including an elongated member threaded at its opposite ends, a pair of fixture

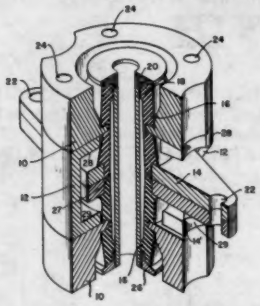
retaining end pieces threadedly engaged at opposite ends of the member, a mastarm clamp means, including variable length chains for extending around and frictionally engaging a mastarm, and means for adjustably securing said mastarm clamp means in a selected location along the length of said elongated member.

3,764,100

COMPOUND-TWO-STAGE RESILIENT ISOLATION MOUNTING FOR USE IN ATTENUATING MECHANICAL VIBRATIONS

William I. Young, Elkridge, and Robert J. Hanners, Edgewater, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1971, Ser. No. 212,358
Int. Cl. F16f *15/04*
U.S. Cl. 248—358 R **4 Claims**



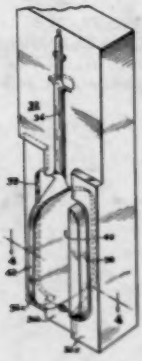
The invention is a resilient isolation mount to be used between vibrating objects and their supporting structures to reduce the transmitted vibration.

3,764,101

KITCHEN MIXER IMPELLER AND MOLD FOR MAKING IT

Cus Waldemar Wallin, Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Division of Ser. No. 148,339, June 1, 1971, Pat. No. 3,734,643. This application Feb. 2, 1973, Ser. No. 334,051
Int. Cl. B29c *1/16*
U.S. Cl. 249—160 **3 Claims**



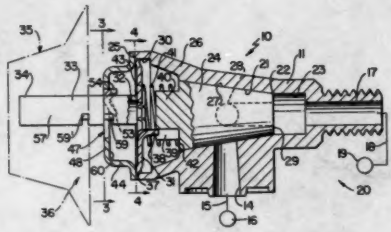
An integral impeller having equally spaced blades and a two-piece mold for making it. The impeller is cast by rotating all blades slightly with respect to the mold parting plane and a plane perpendicular to the parting plane.

3,764,102

FUEL CONTROL DEVICE AND SYSTEM UTILIZING THE SAME

Harvey J. Shopsky, Latrobe, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 129,701, March 3, 1971, Pat. No. 3,712,580. This application Oct. 31, 1972, Ser. No. 302,390
Int. Cl. F16k *35/00*
U.S. Cl. 251—96 **7 Claims**



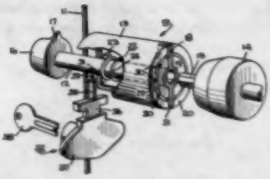
A fuel control device wherein the manual selector is axially movable relative to a valve housing to unlock the selector therefrom and is movable in a rotational direction relative to the housing to drive a fuel control valve member between its operating positions. In order to prevent wobble of the selector as the same is being moved relative to the valve member and/or relative to the housing, the selector and the housing each respectively has a pair of axially spaced guides cooperating respectively with the pair of guides on the other member so that in all positions of the selector, the two axially spaced guides of the selector are cooperating with the axially spaced guides of the housing.

3,764,103

SAFETY LOCK FOR A STOVE

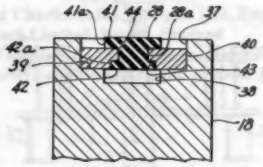
George A. Oliverio, 146-03 25th Rd., Flushing, N.Y.

Filed July 7, 1972, Ser. No. 269,850
Int. Cl. F16k *31/60, 35/06*
U.S. Cl. 251—292 **10 Claims**



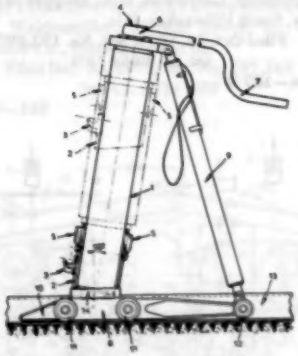
The safety lock is constructed as a self-contained unit with a T-shaped shaft rotatably mounted within a casing in opposition to a burner regulator. The end of the shaft carries a socket to receive a similarly shaped head on the regulator as well as an arm to seat within a recess in the casing. The shaft is biased by a spring outwardly of the stove housing and must be pushed towards the regulator in order to free the shaft from the recess in the end face of the casing. The force of the spring is sufficient to prevent small children from turning the shaft. A secondary lock is also provided to prevent any movement of the shaft.

3,764,104
EXPANSION COMPENSATING DISPENSING VALVE
William G., Kempton, 1855 Sherington Pl., No. M106, Newport Beach, Calif.
Filed Mar. 15, 1971, Ser. No. 124,006
Int. Cl. F16k *51/00*
U.S. Cl. 251—357 4 Claims



A dispensing valve including a valve head engageable with an annular seat which circumscribes a flow passage, in which the head has an elastomeric central valve seat engaging section of circular configuration, the central section extending over an expansion cavity. An aerosol dispenser including a pair of such valves for dispensing measured from from a container.

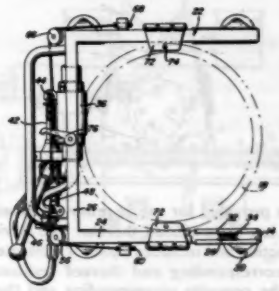
3,764,105
DEVICE FOR CHANGING THE WHEELS OF AN AIRCRAFT
Yves Ducuing, Villa Athena 26 Ave. Varavilla, Roquebrune-Cap-Martin, France
Filed Apr. 19, 1971, Ser. No. 135,150
Claims priority, application France, Apr. 24, 1970, 7014990; Oct. 19, 1970, 7037904; Feb. 19, 1971, 7105674
Int. Cl. B60p *1/00*
U.S. Cl. 254—2 R 11 Claims



The present invention concerns a device for changing the wheels of an aircraft or other vehicle of large mass, consisting of a sloping column and mobile system which slides along this column, moved by any means.

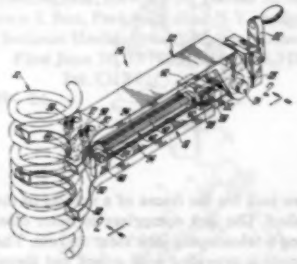
The device is characterized by the fact that the base of the column rests on a stand, which may be mobile, and which may be combined with means of distributing the load, and by the fact that the upper part of the column is connected to the stand by a stabilizing system such as a strut attached to the stand, and possibly a lateral triangular support system.

3,764,106
PRESSURE OPERATED LIFT
Laverne M. Klassen, and Doris V. Frost, both of 114 W. Main, Turlock, Calif.
Filed Dec. 7, 1971, Ser. No. 205,653
Int. Cl. B60p *1/48*
U.S. Cl. 254—8 R 8 Claims



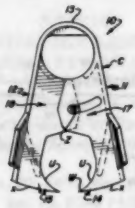
A vertically adjustable power lift incorporating a wheel mounted U-shaped base frame and a similarly configured load-supporting top frame mounted thereover for vertical adjustment by means of an articulate cross link unit. Pulley guided cables extend from the articulate unit to a controlled power unit for a control of the raising and lowering of the top frame and load.

3,764,107
SPRING HANDLING APPARATUS
Joseph E. Mlynarczyk, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 15, 1972, Ser. No. 253,315
Int. Cl. B23p *19/04*
U.S. Cl. 254—10.5 4 Claims



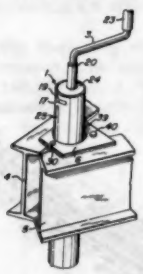
Apparatus for effecting compression of a helical coil spring in its operative environment, the apparatus including a pair of pivotally connected jaws adapted to engage axially spaced coils of the spring, a cable element attached at one end to one of the jaws and at the other end to a nut member slidably supported on the other of the jaws, and a screw actuator rotatably supported on the other jaw and threadedly engaging the nut member so that rotation of the screw actuator shifts the nut member to place the cable element in tension to effect closing of the jaws and compression of the spring.

3,764,108
STAPLE-REMOVING DEVICE
Stanley V. Dahlin, Chicago, Ill., assignor to Swingline, Inc., New York, N.Y.
Filed Apr. 12, 1972, Ser. No. 243,219
Int. Cl. B25c *11/00*
U.S. Cl. 254—28 10 Claims



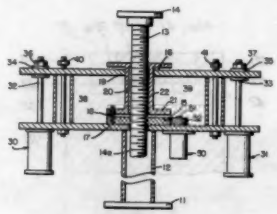
A device is provided for use in removing from a surface, a staple which has been affixed thereto. The device is of one-piece construction and includes a pair of elongated arms, each having one corresponding end thereof resiliently interconnected and the opposite corresponding end thereof free. A pair of complemental jaws are formed on the free ends of the arms. The arms are biased to assume a divergent position relative to the interconnected ends. Intermediate the ends of each arm, there is provided a guide means which protrudes therefrom towards the other arm. The distal portions of the guide means are interconnected and restrict the relative movement of the jaws to within a predetermined segment of a given circle.

3,764,109
JACK
Russell E. Hollis, Jr., 502 Merrick Dr., Xenia, Ohio
Filed Nov. 29, 1971, Ser. No. 202,966
Int. Cl. B66f *3/10*
U.S. Cl. 254—86 R 17 Claims



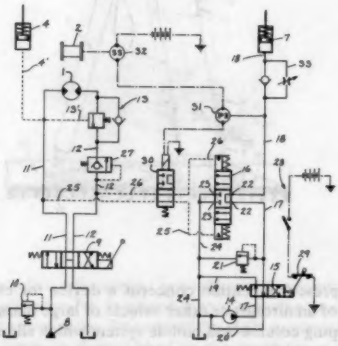
A weld-free jack for the frame of a vehicle of the type to be trailed or pulled. The jack comprises an outer elongated body or tube having a telescoping jack stem therein. The upper end of the jack stem is provided with a jack nut through which a jack screw passes in threaded engagement. Axial movement of the jack stem is accomplished by means of the jack screw, the upper end of which extends above the jack body and is provided with handle means. At the upper end of the jack body, the jack screw is provided with a thrust washer and thrust bearing; these last mentioned elements, together with the jack screw, being supported in the jack body by a transverse key passing through diametrically opposed slots in the jack body. Finally, the jack body passes through a perforation in a plate on the vehicle frame and is affixed to the frame plate by a pair of diametrically opposed keys attached to the underside of the frame plate and entering diametrically opposed slots in the jack body.

3,764,110
JACKING MEANS FOR RAISING BUILDINGS OF MODULAR CONSTRUCTION
Frank Csapo, Avon; Stanley J. Filipek, Rush; Richard H. Horton, Pittsford, and Richard A. Kull, North Chili, all of N.Y., assignors to Stirling Homex Corporation, Avon, N.Y.
Filed Feb. 24, 1972, Ser. No. 228,934
Int. Cl. B66f *1/02*
U.S. Cl. 254—105 12 Claims



A two-nut, short-stroke screw jack is disclosed having a central threaded member, upper and lower plates, a short-stroke hydraulic jack for lifting the load, and a novel arrangement for driving the upper and lower nuts. A single drive means is used to provide a continuous drive for the lower nut even when the lower nut does not rotate. The upper nut is driven by a resilient coupling means linking the upper and lower nuts. During the first portion of the lifting sub-step, the short stroke jack lifts the load while the drive means rotates the lower nut downwardly. During this first portion of the sub-step, the upper nut is wedged against the upper plate and does not rotate. The lower nut is driven downwardly until it is wedged against the lower plate and the drive means stalls out. During the second portion of the sub-step, the upper plate is lowered and the upper nut is driven downwardly by means of the resilient coupling linking the upper and lower nuts. The cycle is then repeated for the next stroke.

3,764,111
FREE FALL CIRCUIT FOR HYDRAULIC WINCH
Robert E. Dummer, Greenfield, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.
Filed Oct. 26, 1971, Ser. No. 192,097
Int. Cl. B66d *1/00*
U.S. Cl. 254—187 R 11 Claims



A free fall operating circuit for a hydraulic winch of the type including a hydraulically releasable free fall clutch includes a pump normally operable to release the clutch and a sensing valve operable to cut off the pump and allow the clutch to reset whenever there is relatively higher pressure in either main operating line for the winch motor, the net result being

that there is free fall action whenever the main valve operating lever is in neutral. The circuit includes a lockout valve, and this is interlocked with the machine start circuit to prevent starting while the clutch is released. A safety valve and circuit prevent resetting of the clutch while the winch drum is in free fall motion.

3,764,112

APPARATUS FOR MIXING THE CONTENTS WITHIN CONTAINERS

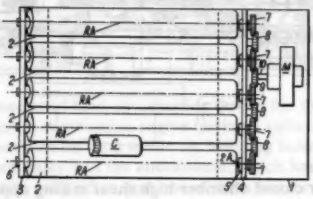
Frank Edward Charles Jelley, Burgess Hill, England, assignor to Denley-Tech Limited, Sussex, England

Filed Jan. 7, 1972, Ser. No. 216,161

Claims priority, application Great Britain, Jan. 18, 1971, 2,362/71

Int. Cl. B01f 9/00

U.S. Cl. 259—57 4 Claims



The described invention concerns apparatus for gently and continuously agitating the contents of one or more elongated containers such as sampling phials, which consists of a number of cylindrical rollers borne by a base structure and positively driven for rotation all in the same sense of direction on rotation axes which are parallel, the cylindrical axis of each roller being inclined to its rotation axis, so that a container placed in supporting contact with any two adjacent rollers is rotated and simultaneously rocked in two dimensions.

3,764,113

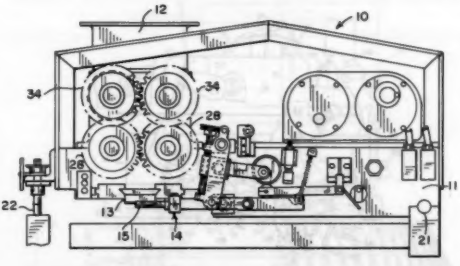
DOUGH FORMING AND EXTRUDING MACHINE

Edward A. Weidenmiller, Morton Grove, Ill., assignor to Weidenmiller Co., Morton Grove, Ill.

Filed Dec. 13, 1971, Ser. No. 207,319

Int. Cl. A21c 1/08

U.S. Cl. 259—185 3 Claims



A dough forming and extruding machine having upper and lower pairs of staging and feeding rolls coordinated by driving mechanisms operating the rolls at similar speed wherein the staging rolls, being of smaller diameter, result in higher surface speed of the feed rolls whereby linear travel of the feed rolls is greater, thus increasing pressure of the dough against the extrusion openings.

3,764,114

PROCESS FOR CONTINUOUSLY PRODUCING SOAP AND DEVICE FOR CARRYING OUT THE PROCESS

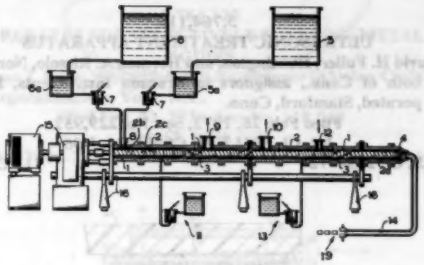
Herbert Ocker, Leonberg, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany

Filed Sept. 7, 1971, Ser. No. 178,026

Claims priority, application Germany, Sept. 12, 1970, P 20 45 272.6

Int. Cl. B01f 7/08

U.S. Cl. 259—6 5 Claims



A mass of soap ready for forming cakes of soap therefrom is produced in continuous operation by conveying starting materials as conventionally used for the production of soap through a continuous treatment line including a screw extruder with at least two parallel screws, the screw elements of which are in mesh and coact with the inner wall of the casing of the extruder. The screws are divided into sections or groups of screw elements the pitch of which increases in downstream direction. Sections of kneading discs are interposed between selected sections of screw elements to effect kneading and homogenization of the materials. The starting materials are fed into the casing at one end thereof and additives are added through casing openings as the mixture of the starting materials is being conveyed in the casing toward the discharge port thereof. The mixture is discharged from the casing as finished soap of formable consistency.

There is also disclosed an installation for carrying out the afore-described method of producing soap in continuous operation.

3,764,115

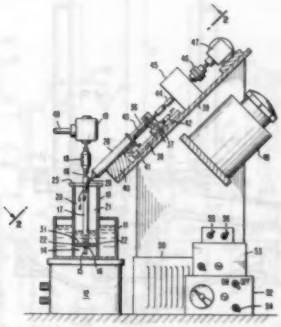
METHOD AND APPARATUS FOR MIXING FLUIDS

Robert L. Buckingham, Hawthorne; Harold H. Herd, Pawling, and Theresa I. Sun, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,310

Int. Cl. B01f 7/18, 15/02

U.S. Cl. 259—24 10 Claims



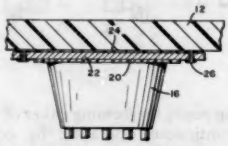
A gelatin medium is stirred in a three-chamber container which includes a rotating paddle turning at an adjustable con-

stant speed in the lowest one of the chambers. Potassium halide and silver nitrate solutions are added to the other chambers at a constant velocity by an ejecting system driven at an adjustable constant velocity. The ejection system includes syringes which contain the above solutions and which dispense equal volumes of each solution per unit time into a gelatin medium in the container. The container is surrounded by a water jacket maintained at a constant temperature by a heating element controlled by an adjustable thermostat.

3,764,116
ULTRASONIC TREATMENT APPARATUS

David H. Fuller, Huntington, and Herman A. Rissolo, Norwalk, both of Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.

Filed Feb. 28, 1972, Ser. No. 229,952
Int. Cl. B01f 7/02; C09j 5/04, 5/06
U.S. Cl. 259—72 **13 Claims**

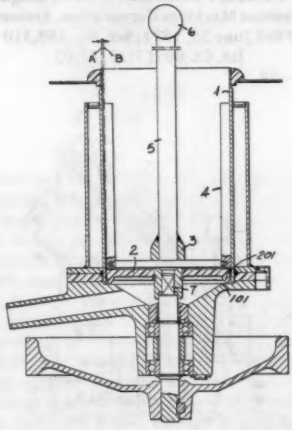


In an ultrasonic treatment apparatus the tank adapted to hold the liquid is made of material having a relatively low thermal conductivity, such as polymeric plastics. The transducers are mounted by a first resinous material to a metallic plate which in turn is mounted by a second resinous material to an outer surface of the tank. The first resinous material (epoxy) has a curing temperature which is higher than that of said second resinous material. The plate is provided with spacing means to cause a predetermined thickness of said second resinous material.

3,764,117
AUTOMATIC ICE-CREAM MACHINE

Poerio C. Carpigiani, Anzola Emilia, Bologna, Italy

Filed Jan. 24, 1972, Ser. No. 220,135
Claims priority, application Italy, Feb. 5, 1971, 12477 A/71
Int. Cl. F25c 7/06
U.S. Cl. 259—107 **3 Claims**

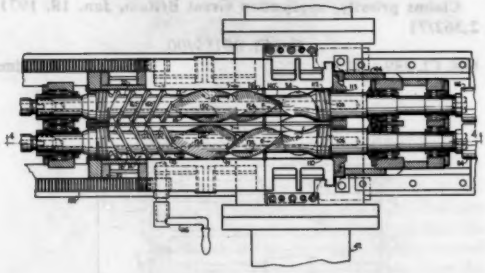


The refrigerating can of an automatic ice-cream machine is formed from the bottom towards the top thereof with a slight outward conicity which permits the bottom plate and dasher member of the machine to be readily and easily removed from the can together with a batch of ice-cream produced in the can.

3,764,118
CONTINUOUS MIXER

James T. Matsuoka, Brecksville, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio

Filed Feb. 17, 1972, Ser. No. 227,569
Int. Cl. B01f 7/08
U.S. Cl. 259—192 **24 Claims**

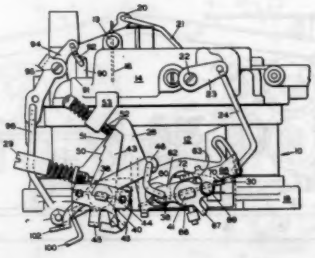


Internal or closed chamber high shear mixing apparatus for compounding materials including solid ingredients which become gelatinous at temperatures above ambient temperature, such as, rubber, elastomer, plastic, and like mixes, in a continuous manner having parallel material processing rotors in side-by-side communicating chambers closed except for a material feed opening adjacent one end and a material discharge opening adjacent the other end, the latter opening communicating with a screw controlled discharge aperture directly communicating with the rotor chambers of extensions thereof and offset from and extending transversely of the axes of rotation of the rotors. Each rotor comprises high helix angle mixing blades preceded by a feed screw.

3,764,119
STAGED ACCELERATOR PUMP FOR TWO-STAGE CARBURETOR

John L. Niebrzydoski, Florissant, Mo., assignor to ACF Industries Incorporated, New York, N.Y.

Filed Aug. 23, 1971, Ser. No. 174,016
Int. Cl. F02m 7/08
U.S. Cl. 261—23 A **4 Claims**



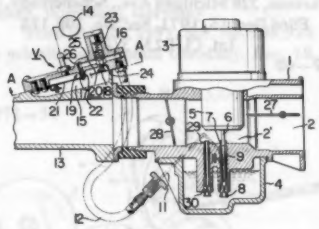
Lever and linkage mechanism are disclosed for staged or sequential operation of the accelerating pump of a two-stage carburetor. The linkage mechanism is so arranged that the accelerating pump is caused to travel during an initial opening of the primary valve of the carburetor, after which the pump ceases to move until the secondary throttles begin to open, at which time additional pumping action is accomplished by the accelerator pump.

3,764,120

AIR BLEED ADJUSTING DEVICE FOR THE CARBURETOR OF AN INTERNAL COMBUSTION ENGINE

Yasuhiro Imai, Yamato-machi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1971, Ser. No. 187,602
Claims priority, application Japan, Oct. 9, 1970, 45/88263
Int. Cl. F02m 7/24
U.S. Cl. 261—39 B 2 Claims



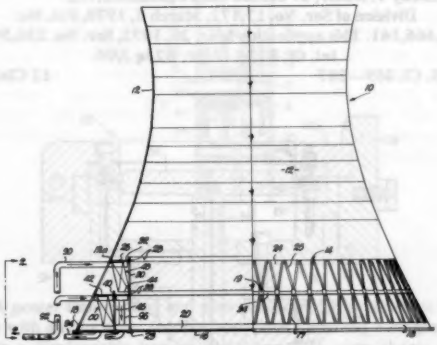
The amount of bled air adjusting device for the carburetor of an internal combustion engine having a valve assembly settled between an air path to the air bleeding holes on a nozzle of the carburetor and the atmosphere, which has two ports in parallel with each other, just one of them has a cutoff valve to permit air to pass therethrough from the atmosphere to said air path at a temperature of the engine above a predetermined temperature during warming-up running of the engine, and the other has a variable orifice valve to permit air to pass therethrough from the atmosphere to said air path in association with said cutoff valve of the former as the temperature of the engine rises higher than said predetermined temperature during normal running of the engine after the warming-up running.

3,764,121

HYPERBOLIC CROSS FLOW COOLING TOWER WITH BASINS AND FILL INTEGRATED INTO SHELL

Homer E. Fordyce, Kansas City, Mo., assignor to The Marley Company, Kansas City, Mo.

Filed Sept. 11, 1969, Ser. No. 857,134
Int. Cl. B01f 3/04
U.S. Cl. 261—111 6 Claims



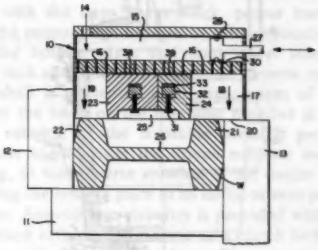
A fireproof, hyperbolic, natural draft, crossflow water cooling tower having two story fill assembly structure between respective concrete hot water distribution and cold water basins within the tower shell and integral therewith adjacent the air inlet of the shell. Stainless steel fill and eliminator supports suspended from the distribution and basin units carry transversely three-quarter wave asbestos cement board fill members and transversely full wave eliminator bars respectively cut from corrugated sheets. The fill members are disposed on edge with the longitudinal length thereof parallel to the air flow through each fill assembly structure while the eliminator bars lie in flat, generally horizontal disposition with the longitudinal axes thereof slightly tilted for drainage of the bars and located perpendicular to the path of travel of air through respective fill assembly structures.

3,764,122

APPARATUS FOR SELECTIVELY SCARFING METAL BODIES

Thomas J. Lytle, White Plains, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 23, 1971, Ser. No. 118,048
Int. Cl. B23k 7/06
U.S. Cl. 266—23 H 2 Claims



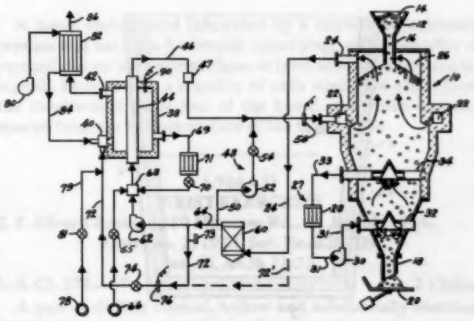
A conventional continuous oxygen slot nozzle scarfing unit can be adapted for selectively scarfing the flanges of beam blanks without scarfing the web by inserting a removable flow restricting plug into the oxygen nozzle slot. The plug may vary in size and may be shaped to direct the flow of the oxygen. Auxiliary air streams may be used in conjunction with the plug to prevent molten metal from flowing over onto the web. The modified scarfing unit may be used in conventional four-sided self-sizing scarfing machines.

3,764,123

METHOD OF AND APPARATUS FOR REDUCING IRON OXIDE TO METALLIC IRON

Donald Beggs, and John C. Scarlett, both of Toledo, Ohio, assignor to Midland-Ross Corporation, Toledo, Ohio

Division of Ser. No. 739,377, June 24, 1968, abandoned. This application June 29, 1970, Ser. No. 60,166
Int. Cl. F27d 17/00
U.S. Cl. 266—29 3 Claims



This invention relates to a method and apparatus for reducing iron oxide to metallic iron, utilizing a continuous process

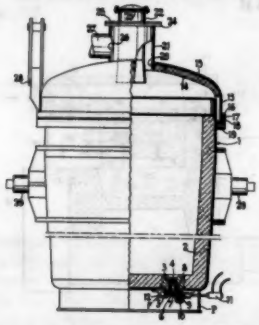
employing a reducing gas with a high H_2 and CO content made by catalytically reforming a mixture of gaseous hydrocarbon and reacted off-gas from the reduction process. The CO_2 plus H_2O present in the reacted off-gas are utilized as the hydrocarbon reforming oxidant, without the addition of reforming oxidant from an external source.

3,764,124

POURING VESSEL-CAISSON FOR TREATING MOLTEN METAL IN A REGULATED ATMOSPHERE

Andre Le Moyne, Terville, France, assignor to Union Siderwigique Du Nord Et L'Est De La France par abreviation, Paris, France

Filed Apr. 2, 1971, Ser. No. 130,714
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V 1 Claim



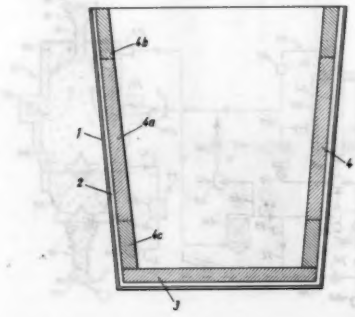
Combined pouring vessel and caisson for treating molten metal in a regulated atmosphere comprising a vessel having a bottom molten metal outlet controlled by sliding closing means and a cover adapted to be sealingly engaged on the upper end of the vessel. Means are associated with said cover for regulating the atmosphere inside the vessel.

3,764,125

LADLE FOR STEEL OR PIG IRON AND MASS FOR THE LINING THEREOF

Gerhard Horn, Melsbach ub./Neuwied; Gert Konig, Neukirchen-Vluyn; Joachim Koenitzer, Dinslaken, and Hand-Wolfgang Ludwig, Kapellen, all of Germany, assignors to Martin & Pagenstecher GmbH, Cologne-Mulheim, Germany

Filed Aug. 20, 1971, Ser. No. 173,507
Claims priority, application Germany, Aug. 26, 1970, P 20 42 793.9
Int. Cl. C21b *3/00*
U.S. Cl. 266—39 9 Claims



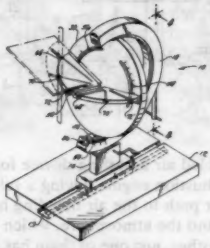
A novel ladle lining composition for use in steel, cast iron and pig iron ladles, particularly in those ladle lining areas especially subject to attack by slag, applied by a per se known slinger technique, comprising silica, alumina, and zirconia, preferably 60 to 90 weight percent silica, 3 to 30 weight percent zirconia and 5 to 10 weight percent alumina having a grain size distribution prior to application of 30 to 55 percent — 0.06 mm, 5 to 30 percent 0.06 to 0.12 mm, 10 to 30 percent 0.12 to 0.5 mm, 0 to 20 percent 0.5 to 2.0 mm and 0 to 20 percent + 2.0 mm.

3,764,126

CUTTING GUIDE

Gabriel N. Arenas, 328 Michigan Ave., Schenectady, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,118
Int. Cl. B23q *3/18*
U.S. Cl. 269—60 4 Claims



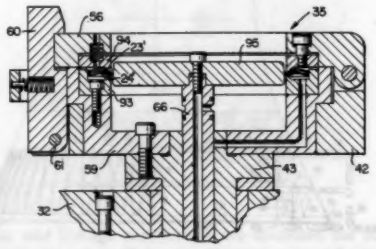
A cutting guide for orienting an object in a predetermined spatial relationship with respect to a cutting means such as a saw blade includes a fixed base and an upright guide support reciprocally mounted to said base for movement toward and away from the cutting means. An upright open frame is connected to the guide support. The frame has an internal semicircular track. A platform is disposed in vertical alignment with the frame and spaced at least partially within the inner periphery of the frame. Means are provided connecting the frame and platform to permit the platform to be selectively rotated about its horizontal axis and vertical axis. Carriage means is movably connected to the platform for supporting the object to be cut. The carriage is adapted to be radially rotated about the face of the platform.

3,764,127

FIXTURE FOR HOLDING TWO BELLOWS MEMBERS TOGETHER FOR THE WELDING THEREOF

Anthony T. Keller, 27 Second St., Pequannock, N.J.

Division of Ser. No. 17,172, March 6, 1970, Pat. No. 3,666,161. This application Mar. 20, 1972, Ser. No. 236,505
Int. Cl. B23p *19/04*; B23q *3/06*
U.S. Cl. 269—287 12 Claims



Method and apparatus for welding together the internal diameters of two bellows members wherein the apparatus has a frame means carrying an indexible table having a fixture thereon, the fixture being adapted to receive and hold the bellows members with the internal diameters thereof in a position

for being welded together. The table is indexed to cause the fixture to move from a loading station thereof to a welding station thereof adjacent welding means carried by the frame means. Automatic means causes the welding together of the internal diameters of the bellows members with the welding means while the members are disposed at the welding station.

3,764,128

SHEET-FEEDING DEVICE FOR PRINTING PRESSES

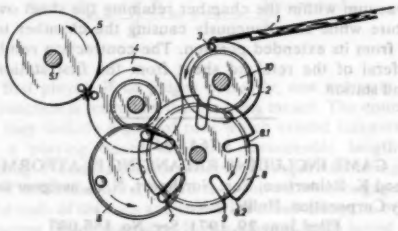
Hans-Bernard Bolza-Schunemann, Wurzburg, Germany, assignor to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Dec. 20, 1971, Ser. No. 209,924

Claims priority, application Germany, Dec. 18, 1970, P 20 62 503.0

Int. Cl. B65h *5/06*

U.S. Cl. 271—51 **19 Claims**



The invention relates to a sheet feeding device for printing presses with rotating pregripper seizing aligned sheets in standstill attitude at the feeding table and accelerating them to the circumferential speed of the printing cylinder and passing them in true register at same speed.

3,764,129

POWER TRANSMITTING AND ZERO POSITION RESTORING DEVICE

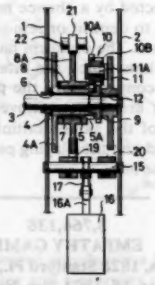
Nobuyuki Yanagawa, Kanagawa-ken, Japan, assignor to Ricoh Co., Tokyo, Japan

Filed Aug. 11, 1971, Ser. No. 170,745

Claims priority, application Japan, Aug. 17, 1970, 45/71431

Int. Cl. B65h *1/08*

U.S. Cl. 271—156 **6 Claims**



A power transmitting and zero position restoring device for use with a copy sheet feeding apparatus including a magazine with a displaceable bottom plate on which copy sheets are stacked; a rack and pinion arrangement for elevating the bottom plate so that the top sheet of the stack is brought into contact with and removed by a feed roller; an output shaft for operating the elevating pinions; a spring clutch system for communicating a power drive with the output shaft; and a gear system between the spring clutch system and the output shaft for maintaining the bottom plate in the elevated position, when the spring clutch system is disengaged in response to the copy sheet contact with the feed roller, by preventing reverse rotation of the output shaft for a predetermined period. The spring clutch system comprises an annular drive member and juxtaposed driven member, bearingly mounted on the output shaft; a coil spring wound on the outer peripheral surface of the drive and driven members; a control sleeve disposed outwardly of the coil spring; and a ratchet wheel on the control sleeve adapted to be engaged by a pawl member. The clutch system is engaged and disengaged by the respective disengagement and engagement of the ratchet wheel with a pawl connected to the feed roller. The gear system comprises a planetary gear, which interacts with a gear on the driven member and a gear on the output shaft, and a rotatable member on which the planetary gear is mounted. When the rotatable means is fixed, by the engagement of a pawl member with teeth on its outer periphery, driving power is transmitted through the planetary gear from the driven member to the output shaft. Upon disengagement of the clutch by the engagement of the pawl with the ratchet wheel in response to the contact of the feed roller with the copy sheet stack, power transmission ceases and the output shaft is urged to reverse rotation by the weight of the bottom plate and copy cheet stack acting through the rack and pinion arrangement. Reverse rotation of the output shaft is prevented until engagement of the pawl member with the teeth on the rotatable member is released, whereupon rotation of the rotatable member permits the planetary gear to ride over the driven member and output shaft gearing, so that reverse rotation of the output shaft occurs, returning the bottom plate to its initial or zero position in the magazine. Appropriate circuitry is provided with suitable switching which actuates the release of a clutch locking pawl for clutch actuation upon the pushing of an operation button, and which actuates pawl release and rotatable member operation in response to the removal of the top sheet from the copy sheet stack. The clutch disengagement pawl is released upon the reverse rotation of the output shaft and the clutch locking pawl is brought into engagement with the ratchet wheel by coacting with the rotatable member pawl release.

3,764,130

METAL SPRINGBOARD WITH TORQUE CELLS

James A. Patterson, 2375 Valleyview Dr., Columbus, Ohio

Filed Mar. 6, 1972, Ser. No. 232,104

Int. Cl. A63b *5/10*

U.S. Cl. 272—66 **7 Claims**

A metal springboard fabricated by a continuous extrusion process and having a horizontal upper plate with a plurality of vertical ribs on the undersurface, at least some of which are integrally formed with a plurality of cells which are offset from the longitudinal centerline of the board and which are also spaced from the bottom surface of the upper plate.

3,764,131

WRIST EXERCISER

J. F. Girard Rooks, 1550 Mawmee Rd., St. Joseph, Mich.

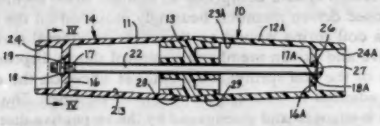
Filed Feb. 2, 1973, Ser. No. 329,029

Int. Cl. A63b *21/22*

U.S. Cl. 272—67 **2 Claims**

A pair of slightly conical, hollow and substantially identical hand grips are sleeved at their adjacent ends snugly upon the opposite ends of a connecting member for relative rotation. Nut and bolt members extending lengthwise within the grips engage transverse wall sections within the grips for adjusting

the frictional engagement of the grips with the connecting member. Additional, larger and hollow hand grips can be

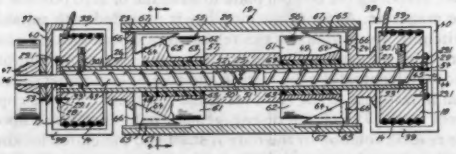


mounted upon the smaller hand grips to increase the diameter of the manually gripped surfaces.

ERRATUM

For Class 271—103 see:
Patent No. 3,764,133

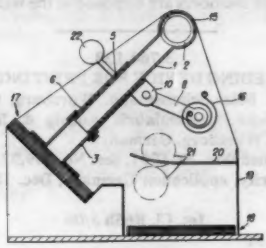
3,764,132
FRICTION TYPE EXERCISING APPARATUS
Douglas Ivan Hepburn, Vancouver, B.C., Canada, assignor to Michael Adrian Poppel, Gibsons, B.C., Canada
Filed May 18, 1972, Ser. No. 254,735
Int. Cl. A63b *21/00*
U.S. Cl. 272—79 R **8 Claims**



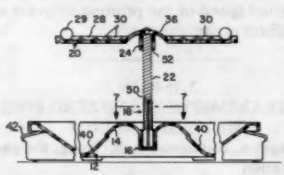
A frictional exercising device having a tubular casing non-rotatably mounted in the housing and two brake shoe pairs in the housing embracing a tubular brake shaft on projecting ends of which pulleys having cables wound thereon are mounted. The pulleys, through a ratchet engagement, can drive the brake shaft in one direction and freewheel in an opposite direction. The brake shaft rotatably extends through a pair of annular pressure plates slidable with respect to a surrounding casing. A rod extends through a brake shaft and connects at one end to a rope guard secured to one of the pressure plates and slidably extends through a rope guard secured to the opposite pressure plate. The opposite end of the rod is threaded to receive an adjusting nut which can be moved inwards against the pressure plate to move the pressure plates together and into engagement with wedges which slide in peripheral slots on the brake shoes between the brake shoes and the casing wall so as to move the brake shoes into braking engagement with the brake shaft and effect frictional braking of the brake shaft when the cables are operated. The pulleys a freewheeling when they are counter-rotated by rewind springs to rewind the cables.

3,764,133
SHEET FEEDING APPARATUS
Colin Gray, and Anthony Robert Burge, both of Watford, England, assignors to Crosfield Business Machines Limited, Watford Hertfordshire, England
Filed June 7, 1971, Ser. No. 150,657
Claims priority, application Great Britain, June 9, 1970, 27,902/70
Int. Cl. B65h *3/08*
U.S. Cl. 271—27 **14 Claims**

A vacuum feeder includes an extensible chamber which can be moved from an extended position to a contracted position in response to a reduction of pressure within the chamber. The movable section of the chamber includes an aperture which is positioned adjacent a sheet at a first station so that withdrawal of air from the chamber sucks the sheet over the aperture. Further withdrawal of air therefore produces a vacuum or partial vacuum within the chamber retaining the sheet over the aperture while simultaneously causing the chamber to contract from its extended position. The contraction results in a transferal of the retained sheet from the first station to a second station.



3,764,134
GAME INCLUDING BALANCING PLATFORM
Tormod K. Reinertsen, East Northport, N.Y., assignor to Ideal Toy Corporation, Hollis, N.N.Y.
Filed June 29, 1971, Ser. No. 158,007
Int. Cl. A63f *3/00*
U.S. Cl. 273—1 R **4 Claims**

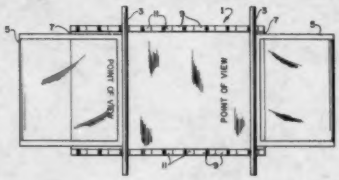


A game which includes a playing platform that is fixed to one end of a stiff spring, the other end of the spring is fixed to a playing piece receiving base. During the play of the game the contestants are directed by a chance mechanism, as by cards drawn from a pack, to deposit or remove playing pieces from the balanced platform. The platform has a plurality of playing piece receiving pockets which are interconnected at a point above the point of connection of the platform to the spring. The playing pieces are free to move from one pocket to another. The play of the game continues until the platform becomes unbalanced and the playing pieces are dumped from the platform onto the base.

3,764,135
EMPATHY GAME
Grace L. C. Madison, 1828 Stanford Pl., Edwardsville, Ill.
Filed Dec. 15, 1971, Ser. No. 208,268
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **4 Claims**

An empathy game comprises several series of cards and means for counting empathic responses. The cards of one series are identity cards and each card of this series bears indicia corresponding to a role to be taken by a player in the course of play. The cards of another series are situation cards and each card of this series bears indicia corresponding to a situation with which the role-taking player is confronted. Two series of reaction cards are provided from which the role-taking player may select his reaction to the situation presented. Prior to the

start of play, one series of reaction cards is dealt to a first player and the other series of reaction cards is dealt to a second player. To play the game, a player takes a card from a deck formed from the identity cards and another card from another deck formed from the situation cards, displaying both cards. The first player then chooses, and plays face down, a reaction card from one of the series of reaction cards previously dealt to him as his reaction to the situation presented by the situation card in the role indicated by the identity card. The other player then selects a reaction card from his set of reaction cards which he believes to correspond to the reaction



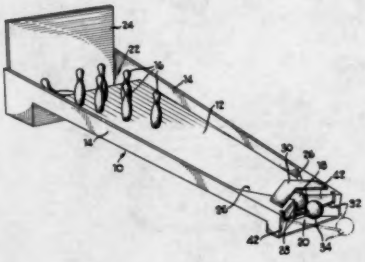
of the first player. If he judges correctly, one accurate empathic reaction is scored on the counting means. The counting means may include a pair of rods which extend transversely across a playing board and are advanceable lengthwise therealong. Notched flanges extending lengthwise along the edges of the board are adapted to receive and disengageably hold the ends of the rods at discrete locations along the board. Transparent sheets extending from each end of the board with their free ends attached to said rods cover areas corresponding to the number of accurate scores as the rods are advanced from notch to notch.

3,764,136

GAME APPARATUS

Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed May 23, 1972, Ser. No. 255,998
Int. Cl. A63d *3/02*
U.S. Cl. 273—38 **6 Claims**



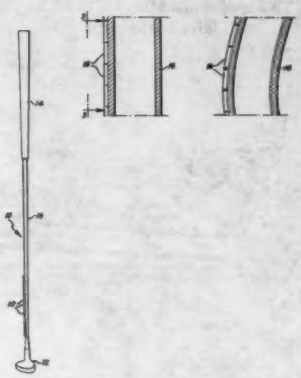
An amusement apparatus simulating a bowling type game having an elongated alley and a plurality of pins positionable at one end of the alley and adapted to be overturned by a ball projected over the alley. A ball propulsion device is provided at the opposite end of the alley and comprises an elastic band extending transversely across the alley and through a spherical propulsion member generally on a transverse diameter of the spherical member. The propulsion member is generally of the same diameter as the bowling ball. Spotting means is provided for the pins on the alley and includes complementary attracting permanent magnets embedded in the base of each pin and in the alley to insure that the pins are properly spotted when placed at preselected spotting positions.

3,764,137

COMBINATION STIFF AND FLEXIBLE GOLF CLUB SHAFT

Anthony J. Petro, P.O. Box 338, Dippel Manor, Pa.

Filed June 9, 1972, Ser. No. 261,547
Int. Cl. A63b *53/12*
U.S. Cl. 273—80 B **11 Claims**



A golf club haVing a shaft construction that inhibits rearward flexing of the shaft at the top of the back swing and initial part of the down swing while permitting forward flexing through the ball on the down swing. A rearwardly facing side of a wall of the shaft is formed of a plurality of sections that extend longitudinally along the shaft and that have proximately located facing ends.

3,764,138

SIMULATED FISHING GAME

Charles W. Schild, 8605 Ramble Rd., Wonder Lake, Ill.

Filed Sept. 8, 1970, Ser. No. 36,122
Int. Cl. A63f *7/16*
U.S. Cl. 273—85 R **1 Claim**

A tiltable surface having a number of openings therein is supported on a pivot post above an inclined surface. Adjacent the lower end of the inclined surface are a plurality of pockets each containing a fish tab. Enclosing the tiltable and inclined surfaces is a box having an oval opening in its top the opening overlying the tiltable surface. A fishing rod has a bobber on a line at one end which bobber rests on the tiltable surface and encloses a ball. The other end of the fishing pole is attached by a second line, extending through the box top, to the tiltable surface. Manipulation of the fishing line causes tilting of the tiltable surface with resultant movement of the bobber over the tiltable surface. When the bobber overlies one of the openings in the tiltable surface the ball falls through to the

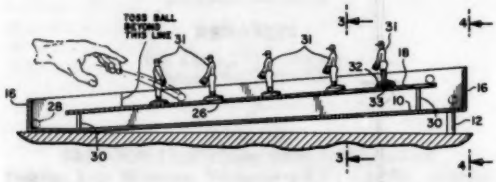
inclined surface and rolls therealong into one of the pockets dislodging a fish tab therefrom.

3,764,139

BASEBALL GAME

Samuel W. Cohen, 4401 Beach 44th St., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 91,844, Nov. 23, 1970, abandoned. This application Mar. 15, 1970, Ser. No. 234,761
Int. Cl. A63f 7/06
U.S. Cl. 273—88 3 Claims



A baseball game in which a spherical ball is rolled on an inclined playing board containing a plurality of apertures representing possible scores in the game, including a plurality of baseball players disposed on the board in front of the scoring holes to prevent the ball from entering therein. The board comprises a first lower inclined board, and a playing board disposed above, and spaced apart from, the lower board, so that when the ball falls through one of the scoring apertures, it rolls downwardly back towards the lower end of the board for replay.

3,764,140

TETHERED BALL APPARATUS INCLUDING PADDLE AND WEAR RESISTANT TETHER CONNECTION TO BALL

Mohamed Hussein Lotfy, 545 Park Blvd., Glen Ellyn, Ill.

Filed Dec. 10, 1970, Ser. No. 96,840
Int. Cl. A63b 71/00
U.S. Cl. 273—95 A 9 Claims

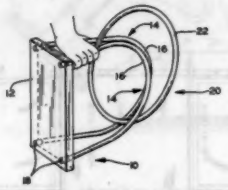
A recreational device primarily intended for use by one player, but which also can be used by several players, comprising a journalled coupling at the upper end of a vertical standard, a resilient ball and a flexible non-resilient cord connected at one end to the ball and at the other end to the journalled coupling, the cord length and the position of the journalled coupling being such that when the ball is struck by a hand-held bat the ball remains always out of contact with the ground and rotates freely about the standard in a substantially constant and regular circular orbit.

3,764,141

ARCUATELY SHAPED RING CATCHER

Clyde A. Robertson, Box 79, and Glen B. Rahm, R.F.D. No. 4, Box 104-B, both of Swanton, Ohio

Filed Feb. 10, 1972, Ser. No. 225,034
Int. Cl. A63b 72/02
U.S. Cl. 273—95 R 3 Claims



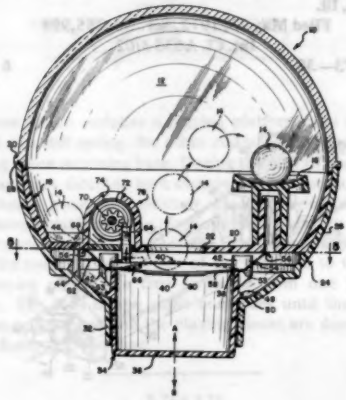
An amusement device having two operable elements normally spaced apart from each other to receive a projectile therebetween wherein the elements are flexed to a projectile engaging position by a player to retain the projectile between the elements of the device.

3,764,142

SPRING ACTUATED PROJECTILE APPARATUS INCLUDING TARGET POCKETS

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.

Filed Dec. 29, 1971, Ser. No. 213,259
Int. Cl. A63b 71/04
U.S. Cl. 273—101 14 Claims

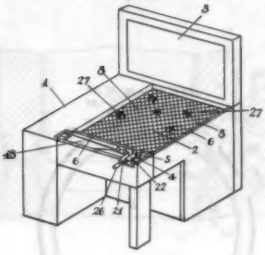


A spring actuated toy in which marbles or similar objects can be viewed as they are individually projected toward designated targets by the snap action of a cricket-type spring. The spring underlies a base having a centrally located opening in which one marble is contained and rests freely on the snap action portion of the spring. Manual cocking of the spring ejects the marble toward the target and means are provided to concomitantly register the flexure of the spring to indicate the number of attempts made to successfully place the marble on target.

3,764,143
TARGET APPARATUS INCLUDING A PLURALITY OF MESH LAYERS AND SENSORS ON EACH LAYER

Eiichi Takahashi, 11-go 5-ban, 5-chome, Honcho, Toda-shi, Saitama, Japan

Filed Sept. 7, 1971, Ser. No. 178,292
Claims priority, application Japan, Sept. 8, 1970, 45/78158
Int. Cl. A63b 71/02
U.S. Cl. 273—122 A 7 Claims

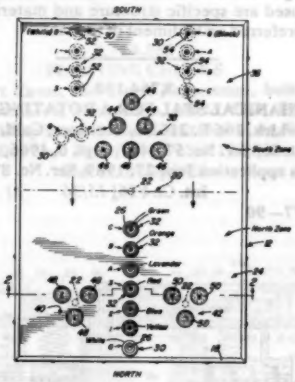


The present invention provides a ball and net game device having several levels of net board whose mesh is just large enough to let a ball pass through, a projector free to change its projection angle to project said ball on an uppermost net board and a detector microswitch to detect said ball dropping in a specified mesh, said detector in electric connection to operate a prize ball discharger and a slide-film projector.

3,764,144
MAGNETIC SHUFFLEBOARD

Thomas F. Arthur, 18 Laux Manor Dr., Metairie, La.

Filed Oct. 7, 1971, Ser. No. 187,440
Int. Cl. A63f 3/00
U.S. Cl. 273—126 A 9 Claims



A portable magnetic shuffleboard game characterized by a marginally enclosed game board whose playing surface is uniquely charted and structured to provide north and south communicating zones featuring a novel arrangement of starting lines. There are two starting lines and playing piece pockets in the south zone and one starting line and left and right playing piece pockets in the north zone. The playing pieces comprise magnetic rings capable of being selectively slid and shiftably moved from an initially set locale to prescribed target and scoring areas. An underlying principle involves magnetic repulsion wherein a magentic cue (called a Q-ring) is manually manipulated in such a manner that it repulses, chases, and drives one of more scoring rings toward the desired goals, racing against time or, alternatively, racing against an opponent for task-completion.

3,764,145
SPACE TRAVEL GAME USING MAGNETS TO SIMULATE THE PULL OF GRAVITY

Frederick E. Schrafft, Old Lyme, Conn., assignor to The Raymond Lee Organization Inc., New York, N.Y.

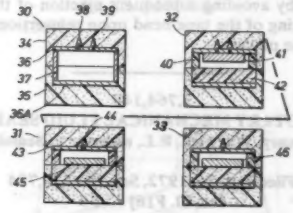
Filed Oct. 19, 1972, Ser. No. 298,853
Int. Cl. A63f 3/00
U.S. Cl. 273—131 AD 4 Claims

A game comprising a first flat horizontal rectangular non-magnetic sheet; first and second ring magnets overlying the first sheet and disposed adjacent opposite ends; first and second disc magnets disposed in the centers of the corresponding first and second ring magnets; a second horizontal non-magnetic sheet overlying the magnets; at least one magnetic body lying movably on the top of the second sheet; a third horizontal non-magnetic sheet disposed above the magnetic body; and at least one bar magnet slidable along the third sheet.

3,764,146
GAME PLAYING PIECES

Charles B. Vogel, 5612 Wickersham, Houston, Tex.

Continuation-in-part of Ser. Nos. 659,627, Aug. 10, 1967, Pat. No. 3,588,114, and Ser. No. 817,116, April 17, 1969, Pat. No. 3,697,076. This application Feb. 1, 1971, Ser. No. 111,238
Int. Cl. A63f 1/02, 3/00
U.S. Cl. 273—137 AB 17 Claims

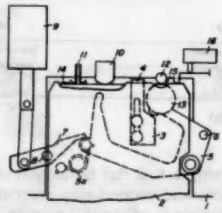


A group of nine or more playing pieces each bearing a different combination of indicators. Some of the indications produced are visually perceivable at all times; others are of such nature as to be perceivable by only one player at a time at his option . The pieces are provided in sufficient number that several kinds of games can be played with them. A first embodiment provides differently colored pieces which have different weights. The colors are visible to all, but the weights are perceived by only one player at a time , by lifting. A second embodiment provides differently colored pieces covered with a soft material within which are objects tactually recognizable by pushing with the finger and also objects recognizable by weight . A third embodiment provides differently colored pieces having hard faces of similar appearance which yield to the pushing finger only on certain pieces . The pieces also contain objects recognizable by their weight . A fourth embodiment comprises pieces made by sandwiching yieldable material between hard plates each having a hole therein. Tactually recognizable objects are imbedded in the material near certain of the holes and also objects recognizable by their weight. A fifth embodiment comprises cards having a number imprinted on one side only and a color which is imprinted on both sides.

3,764,147
CARTRIDGE EJECT ACTUATING CIRCUITRY FOR MULTI-TRACK TAPE CARTRIDGE PLAYER

Takeshi Hirano, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Apr. 12, 1972, Ser. No. 243,362
Int. Cl. G11b 5/00
U.S. Cl. 274—4 B 8 Claims

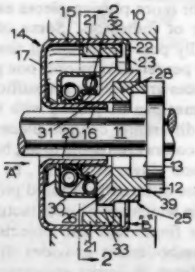


Cartridge eject actuating circuitry for a multi-track tape cartridge player includes a rotary switch having a plurality of contacts equal in number to the number of tracks on a tape in a cartridge inserted into the player. The wiper of the rotary switch is coupled to the tape head indexing cam of the player and moves to corresponding contacts of the switch in accordance with the rotation of the cam. The indexing cam is rotated by an indexing solenoid enerized by the movement of a conductive strip on the tape into alignment with a sensor. A cartridge eject solenoid is coupled to the rotary switch contacts and to the power source of the tape player through a capacitor. Movement of the rotary switch wiper to a predetermined contact causes the capacitor to be charged to energize the solenoid during the charging time of the capacitor for ejection of the cartridge from the player. During movement of the wiper between contacts, the capacitor is discharged, but the cartridge eject solenoid is maintained de-energized to permit movement of the conductive strip on the tape to move past the sensor thereby avoiding subsequent ejection of the cartridge and/or indexing of the tape head upon reinsertion of the cartridge into the player.

3,764,148
ROTARY MECHANICAL FLUID SEAL

John J. Mullaney, Warwick, R.I., assignor to Sealol, Inc., Warwick, R.I.

Filed Jan. 26, 1972, Ser. No. 220,734
Int. Cl. F16j 15/34
U.S. Cl. 277—40 3 Claims

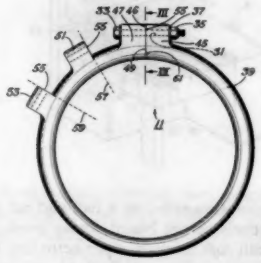


A rotary mechanical fluid seal for use in high pressure and/or high temperature environments, comprising a unitary structure adapted to cooperate with a rotating member and consisting of a cup having an inner shell with a shaft opening, a primary sealing ring having a sealing face engageable with a rotating member and slidably mounted in said housing, a secondary sealing element, fabricated from semi-resilient material, slidably engaging said primary sealing ring in fluid tight relationship and slidably engaging the inner shell or shaft in fluid tight relationship.

3,764,149
ROTARY SEAL

Rex L. Zillman, Longview, Tex., assignor to R. G. Le Tourneau Inc., Longview, Tex.

Filed Apr. 1, 1971, Ser. No. 130,341
Int. Cl. F16j 15/16
U.S. Cl. 277—9 8 Claims

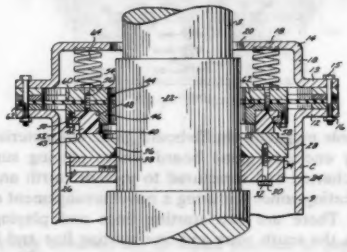


A seal that can be employed in a variety of applications characterized by a lineal member of resilient material adapted to have its ends brought together, with a first protrusion at one end and a plurality of longitudinally spaced apart protrusions at the other end. The lineal member is adapted to be severed adjacent the respective protrusions, so as to be brought into conforming engagement with the one end for effecting a seal about different size shafts carried by members that may pivot or rotate with respect to each other. The protrusions are fastened together with a suitable fastener to complete the seal. Also disclosed are specific structure and materials for use in making a preferred embodiment of the seal.

3,764,150
MECHANICAL SEAL FOR A ROTATING SHAFT

Roy K. Newkirk, 146 E. 216 St., Torrance, Calif.

Substitute for Ser. No. 577,417, Sept. 6, 1966, abandoned. This application June 27, 1969, Ser. No. 871,389
Int. Cl. F16j 15/36
U.S. Cl. 277—90 4 Claims

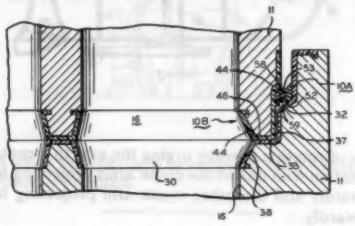


A mechanical seal particularly adapted for use with a rotating shaft, which shaft extends into the interior of a closed vessel that is maintained at a pressure different from that of the ambient atmosphere, and said seal serves this function even when the shaft undergoes appreciable off-center rotation as well as axial end play.

3,764,151
JOINT FOR CAST CONCRETE SECTIONS

Clarence H. Elder, Dune Acres, Ind., and Leonard L. Jugle, Elmhurst, Ill., assignors to Condux International Inc., Naperville, Ill.

Continuation-in-part of Ser. No. 41,439, May 22, 1970, abandoned. This application May 8, 1972, Ser. No. 251,799
Int. Cl. F16j *15/02*
U.S. Cl. 277—207 A 4 Claims

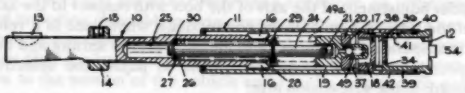


Milti-bore concrete sections of the bell and spigot type are formed integrally with preformed end liners or inserts. These are formed either by a vacuum process of by injection moulding and are placed at the spigot and bell ends of the sections. When the sections are laid in end-to-end relationship, an annular cavity is provided to receive a premoulded gasket or seal which can be compressed between the bell and spigot ends to form a tight seal against ingress of water to the bores of the connected sections. The liners form chamfers at the ends of the bores making it unnecessary to smooth the concrete thereat for the reception of sheathed cable strung through the connected bores. The liners are provided with structure for firmly anchoring the same to the concrete, and are rigid enough to resist deformation when the concrete is expressed from the mould in which it is formed.

3,764,152
FLOATING CHUCKS

Dennis Robert Eaves, and Horst Bergemann, both of Friars Cliff, Christchurch, Hampshire, BH23 4DZ, England, assignors to Bishop Eaves & Sons Limited, Dorset, England

Filed Nov. 18, 1971, Ser. No. 199,858
Int. Cl. B23q *3/00*
U.S. Cl. 279—16 8 Claims



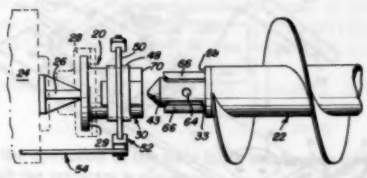
A chuck which includes a tool holding unit and a body having means whereby it can be driven by a driving element and can telescope realtive thereto and having means for transmitting drives to the tool holding unit, characterised in that :

a. the driving element is a shank which has a sliding key connection within the body and that the shank telescopes relative to the body under the action of biasing means housed entirely within an axial bore in the shank and
b. the means for transmitting drives to the tool holding unit includes a compound slide unit comprising a plurality of interfitting elements having tongue and groove driving connections and arranged in such a way as to permit limited radial movement of the tool holding unit relative to the driving shank in a pair of mutually transverse directions.

3,764,153
REMOTE CONTROL LATCH PIN MECHANISM

Harry Miller, 126 Erskine Ln., Scott Depot, W. Va.

Filed July 5, 1972, Ser. No. 269,230
Int. Cl. B23b *31/04;* F16d *1/06*
U.S. Cl. 279—86 9 Claims

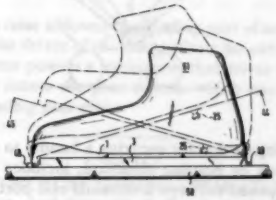


An automatic latch pin apparatus for handling auger flights comprising an auger flight receiver member having a bore adapted to receive an end of an auger flight and a sleeve member mounted on the receiver member, the sleeve member being adapted to be moved by a linkage connected thereto and controlled by an operator. A latch pin transporting mechanism is secured to the sleeve member. The movement of the sleeve member causes the latch pin transporting mechanism to carry a latch pin in a transverse direction with respect to the horizontal axis of the receiving member so that the latch pin can enter into or be removed from the bore of the receiver member, thus locking or unlocking an auger flight in the receiver member.

3,764,154
SAFETY SKI BINDING

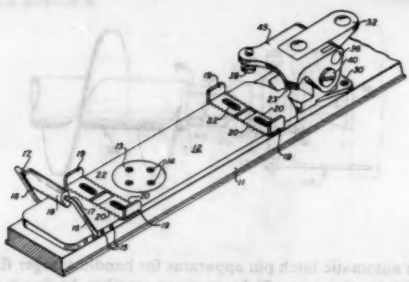
Gerhard Witting, Clemensstrasse 121/3,8000, Munich, 13, Germany

Filed June 15, 1970, Ser. No. 46,138
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 K 23 Claims



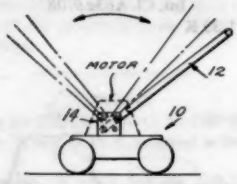
Safety ski binding includes a rigid base plate member disposable between a sole member of a ski boot and a ski member. A locking device manually releasably connects the base plate member to one of the other members, and other locking devices automatically releasably connects the base plate member to the other of the other members. The other locking devices include respective spring-loaded locking elements mutually opposing one another in longitudinal direction of the ski member. The locking devices are received in one of the members, the locking members overlying a reduced part of the one member wherein both locking devices are received. Coupling elements cooperating with the locking elements at the reduced part of the one member extend substantially perpendicularly from another of the members and have respective surfaces facing toward the locking elements. The surfaces extend transversely to the longitudinal direction of the ski member and are curved with respect to a common center of curvature.

3,764,155
RELEASABLE SKI BINDING
John S. Perryman, 17 S. Point Tr., Kinnelon, N.J.
Filed Mar. 16, 1972, Ser. No. 235,249
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 Y 7 Claims



A releasable ski-boot binding in which the portion of the binding that holds the sole of the ski-boot and the portion of the binding that holds the toe of the ski-boot are both pivotable and will simultaneously release the boot from torsional forces.

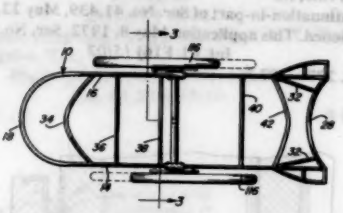
3,764,156
MOUNTING DEVICE FOR SECURING A HANDLE TO A LAWN MOWER
John P. Nepper; Joseph J. Lane, and Juris Skuja, all of Omaha, Nebr., assignors to Arctic Enterprises, Inc., Thief River Falls, Minn.
Filed Feb. 1, 1972, Ser. No. 222,608
Int. Cl. B62b 11/00
U.S. Cl. 280—47.37 11 Claims



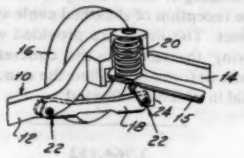
A mounting device for securing a handle to a lawn mower, or other deck or housing structure, includes a simple lever means interposed between a terminal end portion of the handle and an upstanding bracket in such a way that the handle can be urged away from the bracket for purposes of adjusting the angular position of the handle relative to the bracket. The terminal end of the handle includes a pair of projecting pins, one of which functions to fix the pivot axis of the handle, and the other of which functions to lock the handle into a selected angular position.

3,764,157
ROUGH TERRAIN PACK VEHICLE
Edward A. LeBlanc, Star Rt., Box 1-A, Mesilla Park, N. Mex.
Filed Jan. 12, 1972, Ser. No. 217,339
Int. Cl. B60g 11/14
U.S. Cl. 280—124 B 11 Claims

A two-wheeled vehicle including opposite side wheels journaled from the free end portions of forwardly and rearwardly directed crank arms carried by the opposite end portions of a transverse axle journaled from the vehicle frame. The axle is oscillatable relative to the supporting portions of the vehicle frame, the crank arms are mounted stationarily relative to the axle and opposing adjustable torision springs are connected between the vehicle axle supporting portions and the opposite ends of the axle for yieldingly biasing the axle in opposite directions of rotation thereby urging the axle to a center position of rotation with one of the crank arms projecting horizontally forwardly and the other crank arm projecting horizontally rearwardly.



3,764,158
ADJUSTABLE CONNECTION
John A. Lukasik, Dundee, and Patrick J. McCarthy, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed July 5, 1972, Ser. No. 268,945
Int. Cl. B60g 11/14
U.S. Cl. 280—124 R 3 Claims

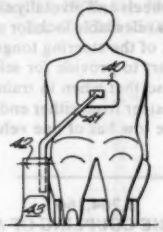


An adjustable connection, in accordance with the preferred embodiment of the invention, includes a tube connected to one member, an undersize bolt connected to another member, and a spring clip positioned within the tube that is constructed to support the bolt eccentrically with respect to the axis of the tube. The spring clip is rotatable within the tube to permit angular adjustment of the axis of the bolt with respect to the axis of the tube. A pair of these connections, when used in a vehicle suspension to connect a suspension arm to sprung and unsprung members, provide a means to adjust the effective length of the suspension arm.

3,764,159
RESTRAINING DEVICE FOR A VEHICLE PASSENGER
Geoffrey Grime, Swansea, England, assignor to Britax (London) Limited, Byfleet, Surrey, England
Filed June 28, 1971, Ser. No. 157,110
Claims priority, application Great Britain, June 30, 1970, 31,637/70; Jan. 11, 1971, 1,186/71
Int. Cl. B60r 21/10
U.S. Cl. 280—150 B 14 Claims

A restraining device to restrain an occupant of a vehicle. The device may be a pad or belt attached to a member movable alongside the occupant's seat between an operative position where the pad or belt is adjacent the occupant's chest and an inoperative position spaced from the occupant's chest. The member is either slidable or pivotable and preferably attached to inertia locking means and a device for absorbing forward

momentum of the occupant on deceleration of the vehicle. The member can be automatically positioned in its operative



position when the vehicle is occupied or used whereby a passive restraint is provided.

3,764,160

INJURY PREVENTION DEVICE FOR VEHICLES

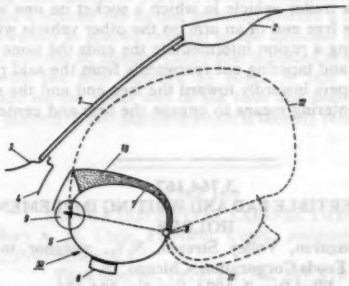
Ernst Fiala, Berlin, Germany, assignor to Wolf-Dieter Klink, Lindbach, Danziger Weg, Germany

Filed Oct. 26, 1970, Ser. No. 84,054

Claims priority, application Germany, Oct. 24, 1969, P 19 54 398.7

Int. Cl. B60r *21/06*

U.S. Cl. 280—150 AB 12 Claims



An injury prevention device for vehicles, such as automobiles, trucks and the like, comprises a container, an inflatable pad including inflatable padding material maintained in a normally compressed condition inside the container under constant high pressure and actuating means being tripped responsive to the motion of the vehicle and rapidly inflating the pad to prevent a person from contacting hard surfaces within the vehicle.

3,764,161

SEAT BELT ASSEMBLY

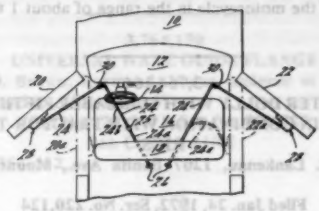
Rinehart S. Bright, Bloomfield Hills, and Charles C. Miles, Detroit, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed July 16, 1971, Ser. No. 163,186

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB 2 Claims

A retractable seat belt assembly having a seat belt with a first portion anchored on one side of the vehicle seat and a second portion secured to a retractor mounted on the vehicle door adjacent the seat whereby an intermediate portion of the seat belt may be continuously disposed across a portion of the vehicle seat in an opened or closed position of the vehicle door. The door mounted retractor for paying out and retracting the seat belt has a webbing locking means which is responsive to the operation of the door latch mechanism of the door on which the retractor is mounted.



3,764,162

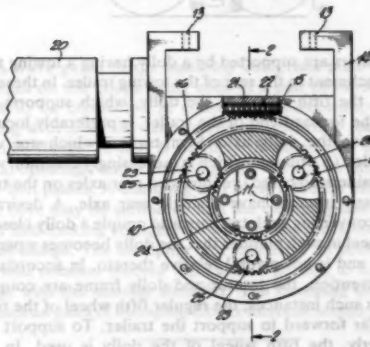
AUTOMATIC LANDING GEAR DEVICE

Charles S. Rawlings, Augusta, Kans., assignor to The Raymond Lee Organization Inc., New York, N.Y.; part interest

Filed Dec. 21, 1971, Ser. No. 210,392

Int. Cl. B60s *9/04*

U.S. Cl. 280—150.5 6 Claims



Apparatus to raise or lower the landing gear of semi-trailers, operatable by the driver of the tractor from his cab. A reversible electric motor powers a worm gear that drives a planetary gear system to rotate the gear system which conventionally operates the landing gear ring.

3,764,163

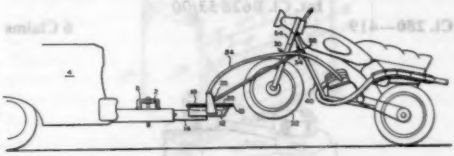
MOTORCYCLE TOWING APPARATUS

Gaylord Ortman, and Kenneth J. Vanderford, both of c/o Frank L. Hart, 1206 May Ln., Bartlesville, Okla.

Filed Jan. 3, 1972, Ser. No. 214,759

Int. Cl. B62d *53/04*; B60p *3/06*

U.S. Cl. 280—292 10 Claims



A motorcycle towing apparatus has one or more receiving elements slidably, removably mounted on a draw bar attached to and extending across the width of a towing vehicle. First and second frames extend upwardly and outwardly from the draw bar. The frames are attached at one end to a horizontally

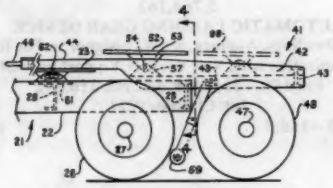
pivotal bearing plate and vertically pivotally connected at the other end to an elongated connecting element. The connecting element is connected to the forward frame element of the motorcycle at a location spaced a distance from the fork pivot housing of the motorcycle in the range of about 1 to about 8 inches.

3,764,164

CONVERTER DOLLY WITH SLIDEABLE FIFTH WHEEL FOR USE IN COMBINATION WITH TRACTOR-TRAILER RIGS

Richard F. Lankenau, 1207 Bonita Ave., Mountain View, Calif.

Filed Jan. 24, 1972, Ser. No. 220,124
Int. Cl. B62d *53/06*
U.S. Cl. 280—415 B **5 Claims**



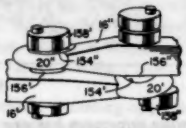
Some trailers are supported by a dolly having a towing tongue for attachment to the rear of the towing trailer. In these installations, the fifth wheel of the dolly, which supports the weight of the forward end of the trailer, is preferably located directly above the dolly axle. Semi-trailers which are very heavily loaded (a situation which is increasingly common with use of containerized cargo) require two rear axles on the tractor, but many tractors have a single rear axle. A desirable means for converting such tractors is to couple a dolly close to the rear wheel in such manner that the dolly becomes a part of the tractor and is not pivotal relative thereto. In accordance with the invention, the tractor and dolly frame are coupled together. In such instances, the regular fifth wheel of the tractor is too far forward to support the trailer. To support the load properly, the fifth wheel of the dolly is used. In accordance with this invention, the dolly fifth wheel is made slideable forwardly on the dolly frame between a rear position over the dolly axle to a forward position midway above the dolly axle and tractor axle to a forward position midway above the dolly axle and tractor axle when the dolly is close-coupled to the tractor. Alternatively, two fifth wheels may be permanently fixed on the dolly.

3,764,165

BAGGAGE CART

Leo E. Hearn, Flint, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.

Division of Ser. No. 94,891, Dec. 3, 1970, Pat. No. 3,727,946.
This application Aug. 28, 1972, Ser. No. 284,157
Int. Cl. B62d *53/00*
U.S. Cl. 280—419 **6 Claims**



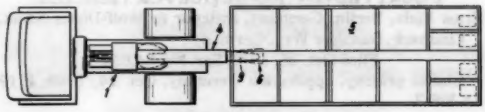
A cart for supporting baggage containers and the like, including a frame supported on surface engaging wheels, a conveying platform rotatably mounted on the frame, apparatus on the frame and the platform cooperating to selectively lock the platform in various predetermined positions relative to the frame, latch assemblies at opposite ends of the conveying platform for securing opposite ends of a baggage container supported thereon, a steering tongue connected to each of the front and rear sets of wheels and pivotally coupled to a tow bar provided at each end, a releasable lock for selectively preventing relative movement of the steering tongue and the tow bar at either end of the cart to provide for selective locking and steering at either end so that when in train, the carts may be readily conditioned to steer from either end, and apparatus for releasably coupling the tow bar of one vehicle to the tow bar of an adjacent vehicle.

3,764,166

APPARATUS FOR THE COUPLING OF A MOBILE ROLL TRAILER

Winfried Fiala, Korntal, Germany, assignor to Martin Fiala KG, Korntal, Germany

Filed Mar. 9, 1972, Ser. No. 233,096
Int. Cl. B62d *53/06*; **B60d** *1/00*
U.S. Cl. 280—425 **12 Claims**



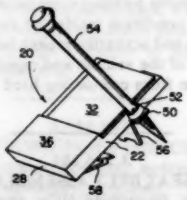
A coupling apparatus, especially for coupling a traction vehicle to a trailer vehicle in which a socket on one vehicle receives the free end of an arm on the other vehicle with the socket having a region intermediate the ends the same width as the arm and tapering out rearwardly from the said region. The arm tapers inwardly toward the free end and the socket includes centering means to engage the arm and center it in the socket.

3,764,167

CONVERTIBLE PAD AND WRITING IMPLEMENT HOLDER

Roland Longarzo, Valley Stream, N.Y., assignor to Consolidated Foods Corporation, Chicago, Ill.

Filed Dec. 2, 1971, Ser. No. 204,271
Int. Cl. B42d *1/00*
U.S. Cl. 281—15 B **8 Claims**



A pad and writing implement holder having a converting bracket means which can be inserted in a first position on the holder to adhesively secure the holder to the side of a telephone or other vertical surface, and in which said converting bracket means can be reversed and selectively inserted in another slot in cooperation with auxiliary strut means to provide base means for a free standing pad and writing implement holder, thereby converting said holder selectively from a free standing holder to one adapted to be secured to an instrument or a vertical surface.

3,764,168

DRILLING EXPANSION JOINT APPARATUS

James W. Kisling, III, and David E. Young, both of Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,064
Int. Cl. F16l 15/02
U.S. Cl. 285—302 11 Claims

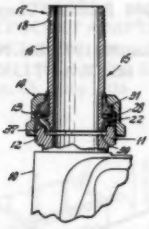
In accordance with an illustrative embodiment of the present invention, a slip or expansion joint for use in a drill string includes a mandrel telescopically disposed within a housing with splines to prevent relative rotation. The housing includes a bottom sub having attached thereto a tube extending upwardly in spaced relation to the adjacent housing section to provide an annular cavity that is placed in communication with the well annulus by ports. A seal assembly is mounted on the upper end of the tube and seals against the lower portion of said mandrel which is slidably received in said tube.

3,764,169

INSULATED SWIVEL CONNECTION

Theodore A. St. Clair, Fiarfield, Conn., assignor to Textron Inc., Providence, R.I.

Filed May 26, 1972, Ser. No. 257,379
Int. Cl. F16l 11/12
U.S. Cl. 285—52 1 Claim



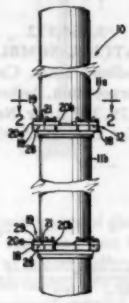
There is disclosed herein a part of the upper portion of a gas meter casing having a threaded hub and a male swivel connected to the hub by a connection nut to engage the threads of the hub, there being a gas sealing and electrically insulating collar between the nut and the swivel, a gas sealing and electrically insulating collar between the swivel and the nut, and a metal stop ring carried by the swivel confined against axial separation from the nipple and located between said insulating collars, the stop ring having a diameter greater than that of the hole in the nut through which the swivel extends so that the stop ring will engage the flange on the nut and prevent the connection nut and meter from falling away from the swivel in the event the insulating collars between the nut and the swivel are destroyed.

3,764,170

UNIVERSAL WAVE GUIDE FLANGE

Charles D. Brown, Raymond, Maine, assignor to Sola Basic Industries Inc., Milwaukee, Wis.

Filed Nov. 23, 1971, Ser. No. 201,522
Int. Cl. F16l 21/02
U.S. Cl. 285—412 5 Claims



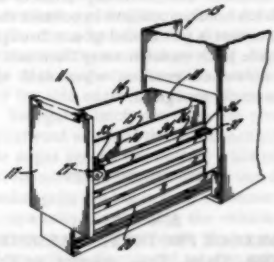
A wave guide flange assembly comprises male and female flanges on the cooperating ends of a pair of tubular conductors to be connected in end-to-end relationship with there being a number of axial openings uniformly spaced in the female flange. A bolt is partially threaded into each of said axial openings, and a clamping unit has a bore through which the bolt passes. A clamping unit is provided for each bolt, and the bore may be slotted so that the clamping unit slides radially into locking engagement with an annular shoulder on the male flange. The clamping unit may have an eccentric shape so that rotation thereof will cause a portion to lockingly engage with the annular shoulder. The clamping unit may also comprise pairs of clamping blocks interconnected by tie bars.

3,764,171

LATCH FOR A TRASH COMPACTOR DRAWER OR THE LIKE

Donald L. Anderson, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Sept. 30, 1971, Ser. No. 185,187
Int. Cl. E05c 9/14
U.S. Cl. 292—8 10 Claims



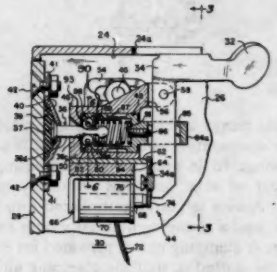
One end of the hinged side wall of the drawer is held in an upright position and is releasably latched to the front panel of the drawer by a rotary hook while the other end of the side wall is releasably latched to the rear panel by a reciprocable rod. The hook and the rod are interconnected such that, when

the hook is turned between latched and unlatched positions, the rod is reciprocated between latched and unlatched positions thereby to enable simultaneous latching and simultaneous unlatching of both ends of the side wall and to insure that one end will not be left unlatched when the other end is latched. The latch further includes a spring-loaded plunger which automatically latches with the front panel to hold the side wall in an intermediate outwardly hinged position and which may be released by turning of the hook beyond its unlatched position.

3,764,172
LATCH ASSEMBLY

Helmut Standke, Woodland Hills, Calif., assignor to Consolidated Controls Corporation, Bethel, Conn.

Filed Oct. 29, 1971, Ser. No. 193,782
Int. Cl. E05c *5/00*
U.S. Cl. 292—15 13 Claims



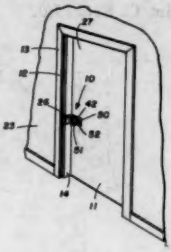
A latch assembly for a door swingable towards and away from a doorjamb comprising a pair of mechanically engageable latch means mounted on the doorjamb and movable relatively between an engaged, mechanically latched position and an unlatched position. Permanent magnet means is provided for holding mechanically latched engagement between said latch means, and electromagnet means is provided having a polarity while energized opposing said permanent magnet for overcoming the holding force thereof to cause unlatching. One of said pair of latch means includes a pair of relatively movable members with one member being fixed to the jamb and the other member movable relative thereto. Said permanent magnet means is positioned in fixed magnetic relation to the fixed member and normally attracts said movable member to a latch holding position in contact therewith. Said electromagnet means is positioned to act through a lever and repel the movable latch member away from said latched position to said unlatched position when said electromagnet means is momentarily energized.

3,764,173
DOOR LOCK PROTECTION ASSEMBLY

Earl H. Griffith, Dalas, Tex., assignor to Frank Subject, Dalas, Tex.

Filed Jan. 3, 1972, Ser. No. 214,695
Int. Cl. E05c *21/00*
U.S. Cl. 292—346 6 Claims

An improved door lock protector assembly is provided. The assembly consists of a protective device to be mounted on the open-end of a hinged door and a shaped shield to be mounted around the door jamb and stop rail. The door mounted device contains escutcheon plates to provide protective strength to the door panelling in the vicinity of the lock and on the outside of the door a flange to prevent the insertion of a flexible tool

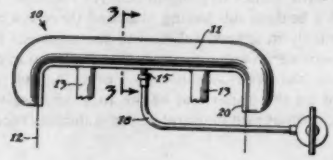


between the door and the jamb for the purpose of forcing the lock bolt away from engagement in the jamb. The jamb shield serves to protect the jamb and stop rail in the vicinity of the lock to prevent the breaking of the jamb by a force against the door or the prying loose of the stop rail.

3,764,174
VEHICLE BUMPER

Demetro Taninecz, 1012 Draughon Ave., Nashville, Tenn.

Filed Jan. 10, 1972, Ser. No. 216,562
Int. Cl. B60r *19/04*; B23p *17/00*
U.S. Cl. 293—98 5 Claims

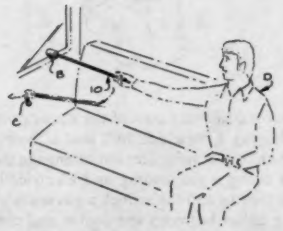


A hollow vehicle bumper having a thin wall of crushable material enclosing a space, and valve means for introducing fluid under pressure into the space to restore the thin wall to substantially its original shape after it has been crushed.

3,764,175
CAR DOOR OPENER

Morris Yavitch, 1008 Benedict Canyon Dr., Beverly Hills, Calif.

Filed June 30, 1972, Ser. No. 268,216
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R 4 Claims



A tool for use by a driver of an automobile to open and close the door lock button and turn the window crank of the

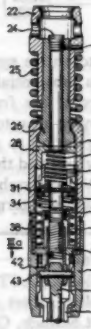
door opposite the driver's seat while the driver remains in the driver's seat, incluidng an elongated member with a handle end and an opposite operating end. The operating end includes a button-operating wall with a slot for receiving the stem of a door lock button to lift it to open the door lock, and having a flange extending around the slot for receiving the enlarged head of the door lock button so the button-operating wall can push down the button to lock the door. The operating end also has a short tubular portion which can receive the knob of the window crank so that the drive can open and close the window.

3,764,176

TOOL FOR LOWERING OR RAISING SAFETY DEVICES IN OIL WELLS

Guy Soulie, Billere, and Gerard Lozach, Neuilly-Plaisance, both of France, assignors to Enterprise De Recherches & D'Activities Petrolieres (ELF), Paris, France

Filed Apr. 15, 1971, Ser. No. 134,183
Claims priority, application France, Apr. 17, 1970, 7013941
Int. Cl. E21b *31/02, 33/10;* **E21c** *19/00*
U.S. Cl. 294—86.25 **3 Claims**



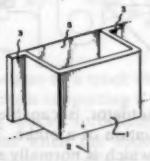
A tool for lowering or raising a safety device in an oil well comprises a hollow cylindrical body, a plunger which reciprocates axially in said body in response to fluid pressure pulses, means for converting the axial movement of said plunger to rotary movement of a rotatable member, and nut and screw means for converting the rotary movement of said rotating member to axial movement by a screw which actuates pincer means.

3,764,177

STAKE POCKET ADAPTER

Ernest F. Woodward, 11 Circle Dr., Camp Hill, Pa.

Filed Dec. 21, 1971, Ser. No. 210,498
Int. Cl. B60p *7/06*
U.S. Cl. 296—43 **6 Claims**



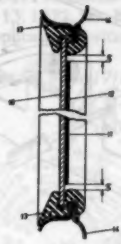
An adapter for supporting the bottom portion of a stake or post of predetermined dimensions, the device being dimensionally adjustable to be securely retained in sockets of various dimensions.

3,764,178

SAFETY WINDSHIELD

Hans Krings, and Franz Kramling, both of Aachen, Germany, assignors to Saint-Gobain Industries, Neuilly sur Seine, France

Filed Oct. 27, 1971, Ser. No. 193,026
Claims priority, application France, Oct. 29, 1070, 7039041
Int. Cl. B60j *1/02*
U.S. Cl. 296—84 R **21 Claims**



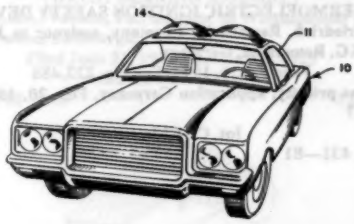
A windshield having two layers of glass joined by a layer of thermoplastic adhesive remains intact in its central area and shatters at its periphery at selected energy levels which protect the human organism from destructive damage.

3,764,179

BUBBLE DOME VEHICLE ROOF TOP ATTACHMENT

Norman Burton, 300 W. 55th St., Apt. 12L, New York, N.Y.

Filed July 15, 1971, Ser. No. 162,977
Int. Cl. B60j *7/10*
U.S. Cl. 296—137 R **6 Claims**

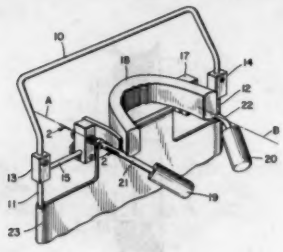


A sun deck bubble dome roof attachment formed of transparent plastic and adapted to be easily fitted into a sun deck opening of a rooftop and held in grooves extending about the edges of the sundeck opening by a slide roof retracted and urged against the rear edge of the top attachment to lock the same in the grooves of the sun deck opening. A gasket extends about the edge of the top attachment to provide a watertight engagement of the side edges with the grooves of the sides of the openings. Swingable latch members are provided on the forward and rearward edges of the top attachment serving to clamp the side edges against the bottom walls of the roof top and to prevent its outward release from the sun deck opening. The rubber gasket grips the top in such a manner that should a forced thrust upwardly from within the vehicle as upon the rider being thrown upwardly and with the engagement of his head the roof top will be disengaged so as to prevent the rider from being severely injured by the head blow. The clamp devices provided upon the top attachment are such as to make the engagement with an opening merely cut into the roof of the vehicle to undersize from the area of the bubble top so that the bubble top can be locked in place without the slide door of the sun deck serving to lock the bubble top in place.

3,764,180
NECK REST AND SHOULDER SUPPORT STRUCTURE FOR PHYSICALLY HANDICAPPED PATIENTS

Lawrence K. Mulholland, 985 Ann Arbor, Ventura, Calif.

Filed July 31, 1972, Ser. No. 276,813
Int. Cl. A47c 7/36, 7/42
U.S. Cl. 297—400 2 Claims

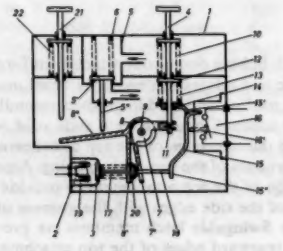


A frame structure which may form part of the back support of a wheel chair supports a U-shaped pad for cradling the rear and sides of a patient's neck. Right and left shoulder pad rolls in turn are coupled to the frame to extend on the right and left sides of the patient's lower neck portion over the shoulders respectively and thence downwardly and inwardly to gently engage the upper right and left chest areas of the patient to restrain him from pitching forward. The U-shaped neck cradling pad may be vertically, horizontally, and tiltably adjusted and the shoulder engaging pads may be swung outwardly and upwardly to provide easy access for a patient. The neck and shoulder support structure is particularly useful for cerebral palsy children.

3,764,181
THERMOELECTRIC IGNITION SAFETY DEVICE

Peter Friedrich, Remscheid, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany

Filed Feb. 1, 1972, Ser. No. 222,486
Claims priority, application Germany, Feb. 20, 1971, P 20 46 601.7
Int. Cl. F23n 5/10
U.S. Cl. 431—81 7 Claims

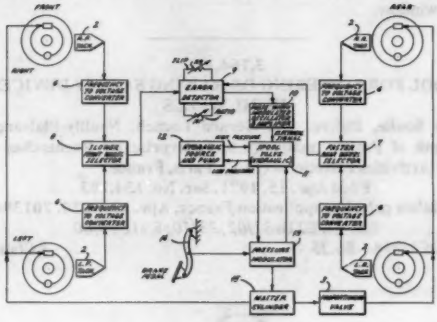


A system of levers controls the main gas solenoid valve switch and ignition burner valve whereby depression of a starting push-button opens the ignition valve while keeping the switch closed, at the same time forcing the armature of a thermoelectric control device into engagement with the ignition flame sensitive magnet. After the interval required to activate the magnet, the push-button is retracted to close the switch and render the system operative subject to shutdown by release of the armature upon failure of the ignition flame. A shutdown push-button is also provided.

3,764,182
AUTOMOTIVE ANTI-SKID BRAKING

Michael Andreyko, Philadelphia, and William C. Follmer, Norristown, both of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed June 23, 1971, Ser. No. 155,824
Int. Cl. B60t 8/08
U.S. Cl. 303—21 EB 9 Claims

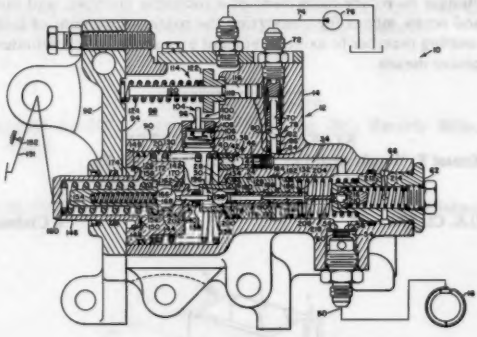


In a four-wheel brake automotive system that so proportions the braking force that a substantially greater fraction of the available braking occurs at the front wheels, anti-skid braking is achieved by employing an automatic control system to adjust the overall braking action to produce a controlled slip between the faster rear wheel and the slower front wheel. This yields a high degree of vehicle stability without substantial sacrifice of stopping capability in terms of ideal braking.

3,764,183
HYDRAULIC BRAKE ACTUATOR

Richard Treichel, Cedar Falls; Albert Anthony Obermeier, Waterloo, and Paul Robert Schuck, Coralville, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Dec. 27, 1971, Ser. No. 211,889
Int. Cl. B60t 15/04
U.S. Cl. 303—54 5 Claims



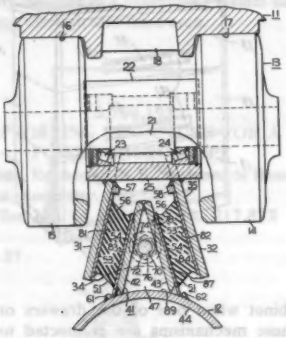
A hydraulic brake actuator is capable of effecting both power and manual actuation of a brake. The brake actuator includes a valve spool which is normally selectively shiftable to connect a primary fluid pressure source to effect power actuation of the brake. The brake actuator also includes a two-stage master cylinder means which is manually shiftable, by the same linkage used for shifting the spool valve, for generating and supplying an alternate source of fluid pressure to the brake to effect manual actuation thereof upon failure of the primary fluid pressure source.

3,764,184

SHOCK MOUNTED TRACK CARRIER ROLLER

Bobby J. Orr, Springfield; Bill A. Danner, Rochester, and Roby A. Parks, Springfield, all of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 2, 1972, Ser. No. 249,541
Int. Cl. B62d 55/16
U.S. Cl. 305—25 4 Claims



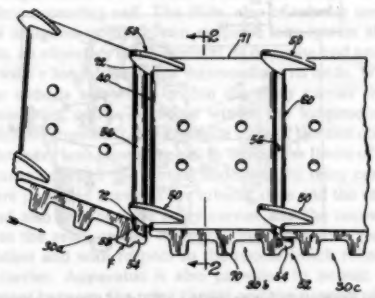
The carrier roller assembly for a track of an endless track vehicle is supported on a track frame by a pair of elastomer pads to absorb shock load, reduce noise and provide movement to keep mud from packing around the roller. A releasable pre-load bar holds the carrier roller assembly on the track frame with the elastomer pads in a preloaded condition and has a lost motion relationship with the carrier roller assembly permitting downward cushioned movement of the latter during operation of the vehicle.

3,764,185

SHOE FOR TRACK CHAIN ASSEMBLY

William D. Symmank, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed June 1, 1972, Ser. No. 258,855
Int. Cl. B62d 55/22
U.S. Cl. 305—47 6 Claims



This disclosure relates to a track chain assembly which includes an endless chain supporting a plurality of track shoes and entrained over spaced sprockets. The track shoes have overlapping portions when the shoes are located between sprockets and are angularly related to each other while the shoes are passing over the sprockets. One end of each of the track shoes has a pair of lugs extending beyond one end portion for engaging an adjacent shoe while the shoes are passing over the sprockets so as to prevent pivotal movement of the shoes transversely of the longitudinal axis of the endless chain and transmit any load applied to one of the shoes from that shoe to adjacent shoes.

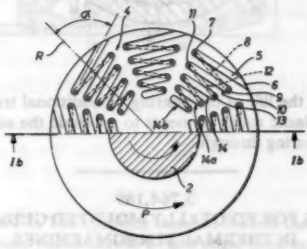
In one embodiment of the disclosure, each shoe also has recesses extending from the lower surface and upwardly tapered surfaces beyond the recesses adjacent the respective lateral edges.

3,764,186

HYDRODYNAMIC BEARING

Nikolaus Laing; Ingeborg Laing, both of Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany, and Ludwig Ludin, Kesselackerweg, CH 5611 Anglikon-Wohlen, Switzerland

Filed Mar. 13, 1972, Ser. No. 233,911
Claims priority, application Switzerland, June 18, 1971, 8968/71
Int. Cl. F16c 17/16
U.S. Cl. 308—9 20 Claims



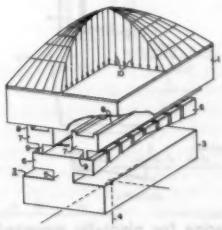
A hydrodynamic groove bearing with two bearing parts which have surfaces of revolution facing each other, one of which has spiral grooves, which are subdivided in at least two groups, the grooves of one group start and end in a certain segment of the grooved surface and are connected in series hydrodynamically by means of communicating channels.

3,764,187

THRUST BEARING ASSEMBLY

Earl C. Kuhn, Verona, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 21, 1972, Ser. No. 265,025
Int. Cl. F16c 17/03
U.S. Cl. 308—160 12 Claims



A thrust bearing assembly for large vertical bearings of the pivoted pad type. The assembly includes supporting means for supporting a bearing pad on its pivot in a manner which substantially eliminates any distortion of the bearing surface of the pad from a plane surface in either the circumferential direction or the radial direction of the bearing.

3,764,188

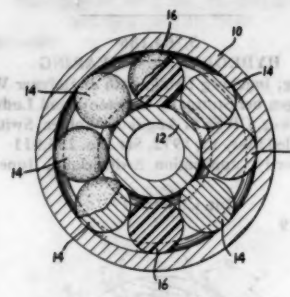
ANTI-FRICTION BEARING

Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Nov. 19, 1971, Ser. No. 200,328
Int. Cl. F16c 33/66
U.S. Cl. 308—187 2 Claims

An anti-friction bearing is made by replacing one or more of the conventional roller elements with TFE or FEP elements of

the same size and shape. After a short break-in period, a thin anti-friction film or TFE or FEP will transfer onto the races and the other bearing elements and will be maintained



throughout the life of the bearing by additional transfer from the fluoroplastic roller elements to preclude the surface coating from wearing through.

3,764,189

BEARING FOR PIVOTALLY MOUNTED GUIDE VANES IN THERMAL TURBOMACHINES

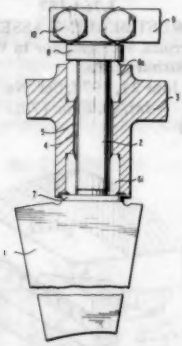
Wolfgang Prostler; Peter Ferschin, and Karl Lechner, all of Munchen, Germany, assignors to Motoren-und Turbinen-Union Munich GmbH, Munich, Germany

Filed Dec. 29, 1971, Ser. No. 213,624

Claims priority, application Germany, Dec. 29, 1970, P 20 64 318.9

Int. Cl. F16c *33/24*

U.S. Cl. 308—237 **13 Claims**



A slidable bearing for pivotally mounted guide vanes in thermal turbomachines including a guide vane stem functioning as a positioning shaft and being carried in sliding bushes in the bearing support. The surface of the guide vane stem is faced with a chromium carbide layer while the bushes are preferably formed of a ceramic oxide such as aluminum oxide. With operations under severe thermal shock loads, the bushes may optionally be fabricated from silicon nitride.

3,764,190

LATERAL FILE

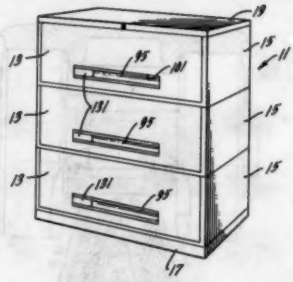
Clarence A. F. Anderson, Fruitport, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.

Filed Apr. 7, 1971, Ser. No. 132,125

Int. Cl. A47b *87/00*

U.S. Cl. 312—286 **5 Claims**

A file cabinet including a number of file shelves or drawers located one on top of the other and which are slidable in and out of the cabinet. The drawers can be arranged so that all of the drawers open on one side of the file cabinet or so that some of the drawers open on one side of the file cabinet and the remaining drawers open on the opposite side of the file cabinet. Anti-tipping mechanisms are provided to automatically prevent opening of the remaining drawers on a side of



the file cabinet when one of the drawers on said side is opened. These mechanisms are connected to locks which prevents opening of any of the file drawers or shelves on one side of the cabinet upon actuation of its lock. A flush pull snap fits into the front panel of each file drawer and a label holding insert snap fits into the flush pull.

3,764,191

Patent Not Issued For This Number

3,764,192

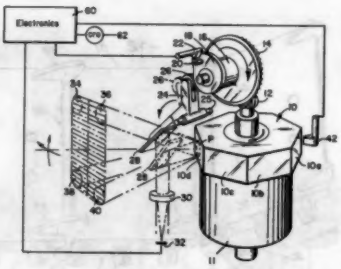
OPTICAL RASTER SCAN GENERATOR

Bryce A. Wheeler, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 28, 1971, Ser. No. 152,466

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **19 Claims**



Optical apparatus for scanning a field of view in a raster pattern including a motor-driven spinning mirror structure having a plurality of substantially optically flat mirrors positioned substantially uniformly about the axis of spin of the structure with the surfaces of the mirrors normal to a radial direction from the axis of spin; an oscillating, substantially planar, mirror positioned to intercept reflected light from a portion of the aforementioned spinning mirror structure, said oscillation being about an axis which is parallel to a plane which is perpendicular to the axis of spin of the spinning mirror structure, the spinning mirror structure producing the line sweeps of the raster scan and the oscillating mirror indexing the line sweeps over the raster scan to cause the line sweeps to be substantially uniformly spaced, said axis of oscillation being located so that

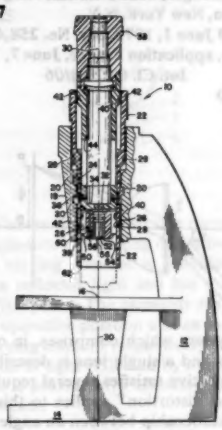
light impinging from a fixed source or pupil onto said oscillating mirror will for any position in the oscillation of said mirror be reflected through a common fixed area constituting a virtual aperture or pupil, said pupil being the origin point for said elevation scan and the axis of said spinning mirror being located so as to place the center of each face of said mirror successively at said virtual pupil whereby both said elevation and azimuth scans appear to originate from said fixed area virtual pupil thereby precluding astigmatic distortion when said scan is optically coupled to a magnifying system having its optical axis passing through said fixed area.

3,764,193

LENS SUPPORTING STRUCTURE FOR A DUAL POWER MICROSCOPE

Donald D. White, Rochester, N.Y., assignor to Bausch & Loub Incorporated, Rochester, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,812
Int. Cl. G02b 7/04
U.S. Cl. 350—37 **5 Claims**



Lens supporting structure for a dual power microscope including a support pillar, a relay carrier and a slide. The support pillar includes a recess in which the relay carrier, of tubular configuration, is received. Within the relay carrier is a relay lens mounting cell. The slide, also of tubular configuration, is designed to support an eyepiece lens system at one of its ends, an objective lens system at its opposite end and is provided with a longitudinal slot intermediate its ends. When the tubular slide is assembled within the relay carrier the relay lens mounting cell is received within the longitudinal slot. With this arrangement, the opposite ends of the slot cooperate with the relay lens mounting cell to define the limits of relative movement between the tubular slide and the relay carrier. O-rings are provided between the tubular slide and the relay carrier and also between the relay carrier and the recess which receives the relay carrier to center the tubes with respect to each other and with respect to the recess which receives the relay carrier. Apparatus is also provided to permit relative movement between the relay carrier and the support pillar.

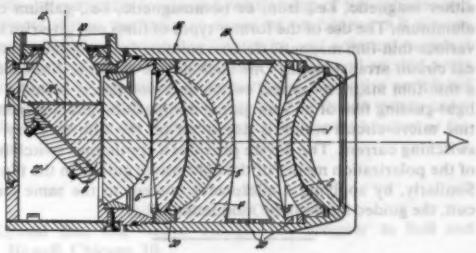
3,764,194

BIOCULAR MAGNIFIER

Bruce D. Trowbridge, Greendale, and Klaus J. Ness, Cudahy, both of Wis., assignors to General Motors Corporation, Detroit, Mich.

Filed May 1, 1972, Ser. No. 248,818
Int. Cl. G02b 5/16, 25/00
U.S. Cl. 350—96 B **1 Claim**

A biocular magnifier having a large apparent field, a magnification of 10X and an exit pupil of about 80 millimeters comprises a fiber optic magnifying element providing an image magnification of 2X and an eyepiece providing an magnification of 5X. The eyepiece element nearest the fiber optic cone is a prism which affords a right angle bend in the optical path.

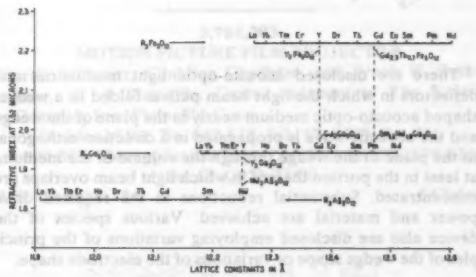


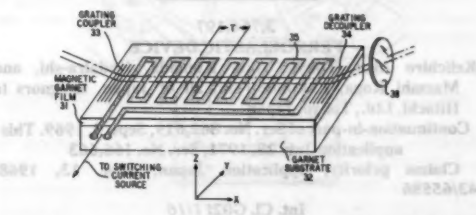
3,764,195

OPTICAL WAVEGUIDE DEVICES USING SINGLE-CRYSTAL GARNET FILMS

Stuart Lawrence Blank, Madison; Roy Conway LeCraw, Summit; Hyman Joseph Levinstein, Berkeley Heights; Ping King Tien, Chatham Twp., Morris County; Lawrence John Varnerin, Jr., Watchung; Stuart Harry Wemple, Chatham Twp., Morris County, and Raymond Wolfe, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 2, 1972, Ser. No. 222,779
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG **10 Claims**





Thin-film optical waveguides are disclosed comprising single-crystal rare-earth garnet films deposited on garnet sub-

strates. Epitaxial film growth techniques, developed largely for magnetic bubble domain devices, provide films with superior optical properties either at visible or near-visible wavelengths. The thin-film optical waveguides are comprised of transparent garnet films of the general formula $R_3B_5O_{12}$; where R can be yttrium, lanthanum, bismuth, or a rare-earth ion with an atomic number of 60 to 71 inclusive, and B an be either magnetic, i.e., iron, or nommagnetic, i.e., gallium or aluminum. The use of the former types of films can give rise to various thin-film magnetic devices suitable for integrated optical circuit arrangements. One such device which is disclosed, a thin-film magneto-optical switch and modulator, includes a light-guiding film of an iron garnet composition and a serpentine micro-circuit which is deposited on the film to carry a switching current. The device provides a continuous switching of the polarization modes of the light waves guided in the film. Similarly, by applying a microwave current to the same circuit, the guided light can be modulated.

3,764,196

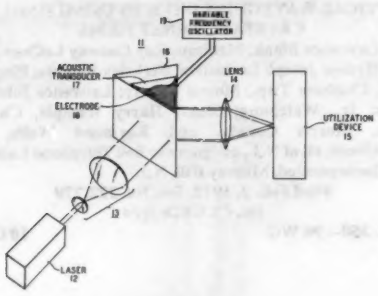
REENTRANT ACOUSTO-OPTIC LIGHT MODULATORS AND DEFLECTORS

Robert Earl Dean, Highbridge; Martin Feldman; Jack Page Griffin, both of Short Hills, and Arthur Woodward Warner, Jr., Whippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 5, 1972, Ser. No. 286,221

Int. Cl. G02f *1/16*

U.S. Cl. 350—161 **7 Claims**



There are disclosed acousto-optic light modulators and deflectors in which the light beam path is folded in a wedge-shaped acousto-optic medium nearly in the plane of the wedge and the acoustic wave is propagated in a direction orthogonal to the plane of the wedge through the volume of the medium, at least in the portion thereof in which light beam overlaps are concentrated. Substantial reductions in the required drive power and material are achieved. Various species of the device also are disclosed employing variations of the principles of the wedge shape or variations of the electrode shape.

3,764,197

FERROELASTIC DEVICE

Keiichiro Aizu, Tokyo; Akio Kumada, Kodaira-shi, and Masashi Koga, Kokubunji-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

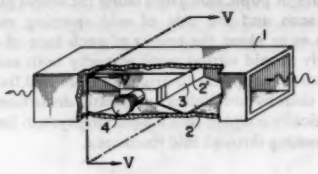
Continuation-in-part of Ser. No. 862,619, Sept. 9, 1969. This application July 28, 1971, Ser. No. 166,663

Claims priority, application Japan, Sept. 13, 1968, 43/65586

Int. Cl. G02f *1/16*

U.S. Cl. 350—161 **9 Claims**

Ferroelastic materials vary in their even-rank polar tensorial properties or similar anisotropic properties when they are shifted from one orientation state to another. A body of such ferroelastic material is combined with means for applying



stress above a certain value thereonto to cause a transition of the orientation state.

3,764,198

OBJECTIVE SYSTEM CONSISTING OF A DIAPHRAGM AND A SINGLE LENS

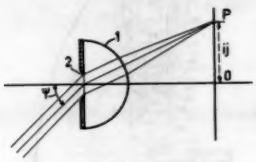
Jean-Jacques Hunzinger, Paris, France, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,487

Claims priority, application France, June 7, 1971, 7120408

Int. Cl. G02b *3/06*

U.S. Cl. 350—190 **2 Claims**



An objective system which comprises, in order of succession, a diaphragm and a single lens is described. It is shown that if such an objective satisfies several requirements, the "-condition of radial distortion" applies to this objective, i.e., there is a linear relationship between an angle of incidence of a beam of radiation on the objective and the associated point in the image plane.

3,764,199

ADJUSTABLE ROTARY SHUTTER FOR MOTION PICTURE CAMERAS

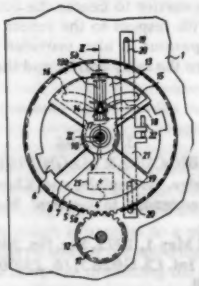
Karl Neudecker, Munich, Germany, assignor to Afga-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 7, 1972, Ser. No. 232,499

Claims priority, application Germany, Mar. 12, 1971, P 21 11 861.6

Int. Cl. G02f *1/30*; G03b *9/10*

U.S. Cl. 350—272 **11 Claims**



An adjustable shutter for motion picture cameras wherein a disk having a light-admitting aperture rotates with two blades

which are movable relative to the disk to thereby overlie varying portions of the aperture. The disk carries a leaf spring having a radially extending slot for a follower pin which extends into arcuate cam slots of the blades and is in frictional engagement with the leaf spring. A shifter is reciprocable in the body of the camera and has two displacing cams one of which can move the follower pin radially outwardly and the other of which can move the follower pin radially inwardly to thereby turn the blades relative to the disk while the disk and the blades rotate. The shifter can be moved by a program wheel to effect gradual changes in the aperture size during the making of exposures with fade-in and/or fade-out effect.

3,764,200

DIGITAL INDICATING DEVICE

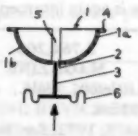
Hansheinrich Glattli, Kusnacht, Switzerland, assignor to Pneumotech A G, Fallanden, Switzerland

Filed Apr. 12, 1972, Ser. No. 243,203

Claims priority, application Switzerland, Apr. 16, 1971, 5543/71

Int. Cl. G02f 1/34

U.S. Cl. 350—285 **15 Claims**



A reflecting element has at least one curved surface having a first plane of symmetry and being operative for reflecting incident light. A varying element is provided for varying the character of the reflector light and has a second symmetry paralleling the first plane. The elements are relatively moveable between an operative position and an inoperative position in which the varying element respectively varies and does not vary the character of light reflected by the reflecting element. An arrangement is provided for effecting such relative movement of the elements.

3,764,201

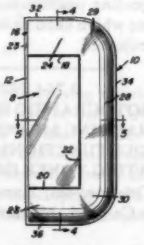
REAR VISION MIRROR

Ernest Haile, Trenton, N.J., assignor to Allen C. Haile, Carson, Calif.

Filed May 17, 1972, Ser. No. 254,244

Int. Cl. G02b 5/08

U.S. Cl. 350—303 **5 Claims**



A rear vision mirror for exterior use primarily on trucks and buses and designed for suspended use on the right-hand side of a cab remote from the driver at the left. It is of one piece construction and characterized broadly by a main flat rectangular image and object reflecting area. A first horizontally disposed convex reflecting area borders and merges with the upper transverse marginal edge of the main reflecting area or zone and is curved rearwardly. A second but lower horizontal rearwardly curving convex reflecting area basically like the upper horizontal convex area merges with the lower transverse marginal area of the main reflecting area or zone. A complemental third but vertical convex reflecting area merges with the outer vertical edge of the main reflecting area. The inward longitudinal edge has a right angularly positioned wall of requisite thickness and width. All of the areas whether flat or convexly curved are selectively as well as conjointly viewable in keeping with the particular locale and relationship of the vehicles and objects within the zone or range of usefulness. All convex areas are of corresponding convexity and adjacent terminal end portions of the third area and the first and second areas are united by spherical corner portions. The entire peripheral or marginal edge is provided with narrow flange means capable of mounting the unique mirror in a support bracket or fixture.

3,764,202

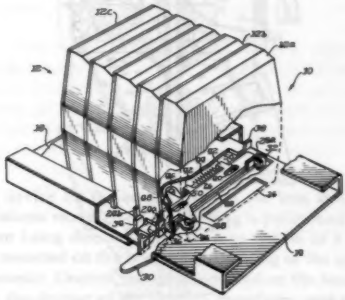
INDEXING MECHANISM

Kiyoshi Iha, Elk Grove Village, Ill., assignor to Bell and Howell, Chicago, Ill.

Filed Jan. 26, 1972, Ser. No. 220,953

Int. Cl. G03b 21/04

U.S. Cl. 352—123 **4 Claims**



An indexing mechanism for sequentially presenting each of a plurality of cassettes containing photographic film to a projection station in a film projector. The indexing mechanism includes two pairs of stop members on sliding plates that are alternately placed in and out of engagement with an abutment on the cassettes.

3,764,203

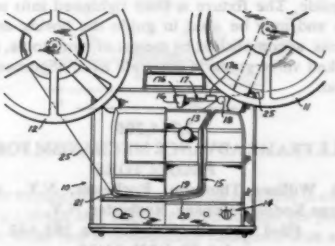
MOTION PICTURE FILM PROJECTOR

Morris Schwartz; Conkling Chedister, and Frank H. Beckman, all of Plainville, Conn., assignors to The Kalart Company Inc., Plainville, Conn.

Division of Ser. No. 842,618, July 17, 1969, Pat. No. 3,609,022. This application Sept. 13, 1971, Ser. No. 179,630

Int. Cl. G03b 23/00

U.S. Cl. 352—124 **5 Claims**



A motion picture film projector, particularly a sound film projector, has an automatic film-threading mechanism with

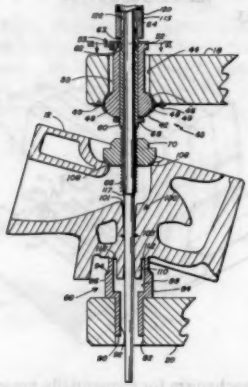
which threading and loop setting are effected by first dropping the film to be threaded into a loading slot formed in the casing of the projector and then moving an operating lever from a film-loading position into the operating position. As a result of such movement the threading mechanism is activated to thread the film upon the upper and lower sprockets, to form upper and lower loops and to move the lens system into position for projection. Removal of the film is effected by simply returning the operating lever to its loading position thereby freeing the film from its engagement with the components of the threading mechanism so that the film can be lifted out of the slot. The projector has driving apparatus for rewinding the film following projection.

3,764,204

VALVE GUIDE BORING FIXTURE

John H. Kammeraad, Holland, Mich., assignor to K-Line Industries, Inc., Holland, Mich.

Filed Nov. 19, 1971, Ser. No. 200,492
Int. Cl. B23b *41/12*
U.S. Cl. 408—75 **17 Claims**



A portable, U-shaped valve guide boring fixture to be mounted on and supported by a cylinder head for an internal combustion engine in order to guide the reworking of the valve guides in said internal combustion engine. The fixture comprises a support post on which are mounted two guide arms normal to the axis of said post. The second arm is fixedly mounted at one end of the post and includes spring seat engaging means. The first guide arm is slideably mounted and spring biased toward the second guide arm intermediate the ends of said post and includes valve seat engaging means comprising a pivotally mounted ball swivel guide having an axial bore to guide said reworking operation. The fixture is clamped over the spring seat and valve seat on the cylinder head, and a tapered alignment pin is inserted through said engaging means and said valve guide to bring the fixture into axial alignment with the valve guide by means of the pivotal action of the ball swivel guide. The fixture is then tightened into said aligned position and may be used to guide the boring and reaming operations, accomplished by means of hand tools, resulting in a reworked valve guide in accurate axial alignment with said valve seat.

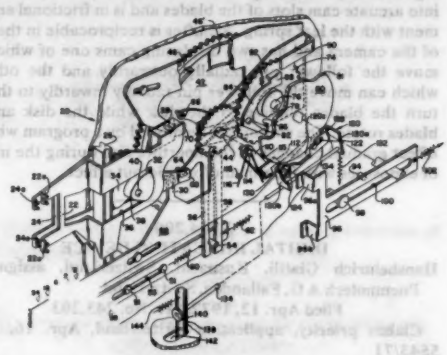
3,764,205

SINGLE FRAME ADVANCE MECHANISM FOR MOVIE PROJECTORS

Kenneth William Thomson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 12, 1972, Ser. No. 288,446
Int. Cl. G03b *21/38*
U.S. Cl. 352—169 **6 Claims**

An improved intermittent film transport for a motion picture projector includes a film claw adapted to periodically engage and advance a film strip and a single frame advance mechanism for restraining the film claw from engaging the film until the mechanism is selectively actuated by the operator. When actuated, the mechanism is effective to release the film claw and permit it to advance the film by a single image frame before the claw is again intercepted and restrained.

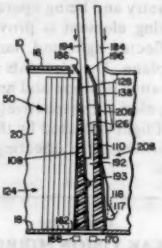


3,764,206

MAGAZINE

Stephen Blecher, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 5, 1971, Ser. No. 103,997
Int. Cl. G03b *23/14*
U.S. Cl. 353—21 **2 Claims**



A stack type magazine for a slide projector having a casing containing two spaced apart partitions that divide the casing into three sections, namely, a slide supply section into which a stack of slides can be placed that are to be moved to a preview position, a second dummy section into which each successive slide that has been previewed can be moved before it is returned to a projecting position in the projector and a slide take-up section into which each successive slide can be moved after it has been projected.

3,764,207

ELECTROPHOTOGRAPHIC PROCESS UTILIZING SINGLE CHARGING MEANS FOR EFFECTING SIMULTANEOUS FUNCTIONS OF CHARGING AND FACILITATING TONER IMAGE TRANSFER

Kazuo Obuchi, Odawara-shi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-Ashigara-shi, Kanagawa, Japan

Filed Dec. 10, 1971, Ser. No. 206,034
Claims priority, application Japan, Dec. 10, 1970, 45/109878
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **3 Claims**

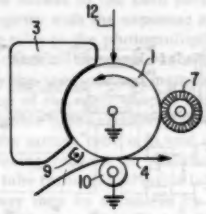
The electrophotographic duplication process comprising:

a. charging the surface of an electrophotographic photoreceptor;

b. exposure said charged surface to form an electrostatically charged latent image thereon;

c. develop said latent image with a toner having a charge opposite to that of said latent image;

d. charging said developed latent image and said photoreceptor with a charge of the same polarity as in step (a), thereby reversing the polarity of said toner and recharging said photoreceptor surface;



e. transfering the majority of said toner to a receiving layer to form a toner image;

f. removing residual toner;

g. repeating (b) – (f).

Apparatus to accomplish the above purpore requiring only one corotron.

3,764,208

DEVELOPING DEVICE FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINES

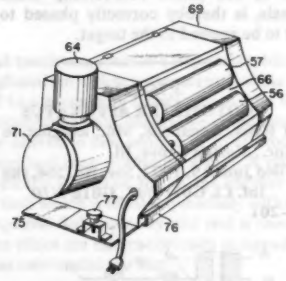
Isao Takahashi, Kohoku-ku, Yokohama-shi, Kanagawa-ken; Motoharu Fujii, Setagaya-ku, Tokyo; Kazuo Kawakubo, Hino-shi, Tokyo; Masao Ariga, Komae-shi, Tokyo, and Susumu Sugiura, Yamato-shi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,276

Claims priority, application Japan, Dec. 29, 1970, 45/127212

Int. Cl. G03g *15/08*

U.S. Cl. 355—3 **5 Claims**



A developing means for applying developing agent to an electrostatic latent image formed on an electrophotographic sensitive member wherein the inlet of a developing agent container is directed upwardly and downwardly while attached to the developing device whereby both the supply of new developing agent to the developing device and removal of used developing agent from said developing device are realized.

3,764,209

HAND-HELD PHOTOMICROSCOPE

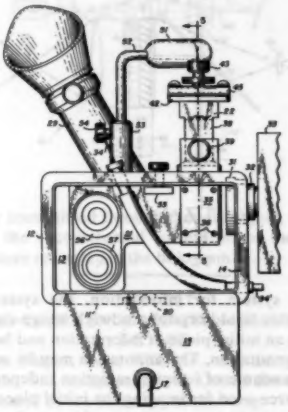
Harry R. Zabower, Campbell, Calif., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Sept. 13, 1972, Ser. No. 288,857

Int. Cl. G03b *29/00*

U.S. Cl. 355—18 **19 Claims**

A hand-held, small, portable, lightweight photomicroscope is provided including a housing having a top plate, an objective lens removably mounted on the top plate and extending in a viewing direction upwardly from the plate, a specimen holder adjustably mounted on the top plate and extending upwardly therefrom to hold a specimen above the upper end of the objective lens, a light source movably mounted on the top plate so as to direct light onto the specimen, and a lens system within the housing including a beam splitter for splitting the light beam emerging within the housing from the objective lens into two beams, one beam being directed to a camera



mounting device on the housing where the lens system of a suitable camera mounted on the housing is positioned and the other beam being directed onto the lens system of a suitable eyepiece mounted on the housing for viewing of the specimen by the operator. Control means is mounted on the housing for operating the shutter of the camera therefrom, and means is provided within the housing for securely storing one or more extra objective lenses for replacement of the objective lens in use.

3,764,210

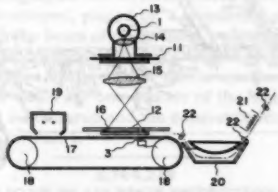
LIGHTING SYSTEM FOR A HALOGEN LAMP IN A DUPLICATING MACHINE

Kitamaro Nakamura, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Nov. 3, 1970, Ser. No. 86,540

Int. Cl. G03b *27/76*

U.S. Cl. 355—69 **5 Claims**

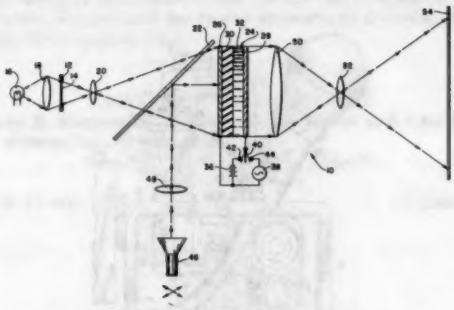


A halogen exposure lamp in a copying machine is controlled to provide a voltage less than the rated voltage for preheating the halogen lamp and is periodically energized with a voltage in excess of its rated voltage for exposing an original. The halogen lamp can be controlled by connecting additional voltage sources to the lamp or by controlling the conductive phase angle of the effective voltage applied to the lamp.

3,764,211
DISPLAY SYSTEM CAPABLE OF SELECTIVE ANNOTATION

John Edwin Morse, Penfield, and Claire Llewellyn James, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,891
Int. Cl. G03b 27/76
U.S. Cl. 355—71 7 Claims

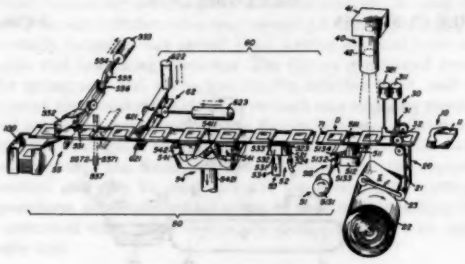


A display system for information, the system having a photoconductor-liquid crystal sandwich image storage device for receiving an initial piece of information and being capable of selective annotation. The annotation may be accomplished by utilizing a source of imaging radiation independent of the radiation source used for imaging the initial piece of information so as to superimpose an additional image signal to the initial piece of information or, alternatively, activating a segment of the photoconductor-liquid crystal sandwich to alter the portion of the image in that particular segment.

3,764,212
PRINTING FROM COLOR TRANSPARENCIES

Max A. Bideau, Joinville-Le-Pont; Charles E. Chauveton, Villiers-Sur-Marne; Alain Fruchard, Nogent-Sux-Marne, and Marc Laurens, Clichy-Sous-Bois, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 69,204, Sept. 3, 1970, Pat. No. 3,692,524.
This application July 24, 1972, Ser. No. 274,538
Int. Cl. G03b 27/30
U.S. Cl. 355—100 7 Claims

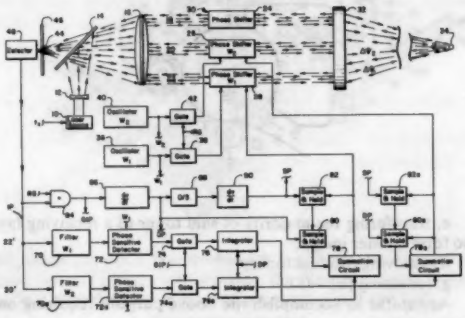


High quality prints of a projection transparency may be inexpensively obtained by use of an unsharp black-and-white mask sandwiched over such transparency . The mask serves not only to sharpen the print image, but also to modify the overall contrast of the "sandwich," whereby printing may be made on color reversal paper. The mask material is in the nature of a web having adhesive areas to which transparencies stick; and the mask material is employed as a conveyor belt for transporting the transparencies.

3,764,213
RETURN-WAVE, PHASE CONTROLLED ADAPTIVE ARRAY

Thomas R. O'Meara, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 8, 1972, Ser. No. 251,487
Int. Cl. G01c 3/08
U.S. Cl. 356—5 20 Claims

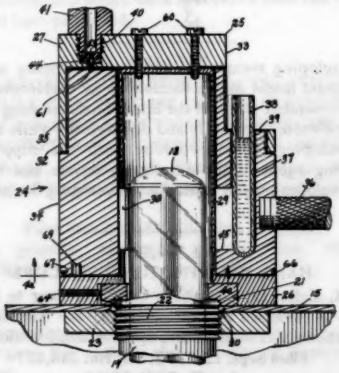


In accordance with one embodiment of the invention received energy from selected subapertures of an energy transmission and reception system is spatial modulated with respect to an image plane stop structure so as to produce at the output of a detector disposed behind an aperture of the image plane stop structure, modulation components indicative of the relative phase relationship associated with each subaperture receiving path. The modulation components are applied to control variable phase shifters, in common transmission and reception paths of the selected subaperture channels, in such a manner that the optical intensity of the image field transmitted through the stop structure is maximized — that is the received image is centered on the stop aperture and the image spread is reduced to the minimum. The transmitted energy, which is applied through the phase shifters adjusted with respect to the phase relationship sensed from the received signals, is thereby correctly phased to cause maximum energy to be applied to the target.

3,764,214
PHOTOMETER APPARATUS

Louis Robert Heiss, Annapolis, Md., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed June 19, 1972, Ser. No. 264,188
Int. Cl. G01j 1/42; G01n 1/10
U.S. Cl. 356—201 9 Claims



A photometer assembly consisting of a basic photometer unit having a photomultiplier tube projecting from its top wall.

A reaction chamber is mounted over and receives the photomultiplier tube. The reaction chamber includes a stationary spool-shaped member having a shank consisting of a shell portion which surrounds the photomultiplier tube and is provided with an exposure aperture. A sample tube carrier rotatably surrounds the shank and has a vertical socket receiving a transparent sample tube, the carrier having a light duct leading from the socket to the shell portion, the duct being movable into registry with the exposure aperture so as to expose the sample tube to the photomultiplier tube in a unique position of the carrier, the sample tube being shielded from ambient light by the spool-shaped member and carrier in this position. The top of the spool-shaped member has a vertical guide tube, the guide tube registering vertically with the sample tube when the sample tube is in said unique position. Luminescence-inducing reagent or radiation may be injected into the sample tube through said guide tube, and the resulting luminescence may then be measured by the resultant signal generated by the photomultiplier tube. The top of the spool-shaped member is cut away opposite the guide tube to allow the sample tube to be inserted into and withdrawn from the socket.

3,764,215

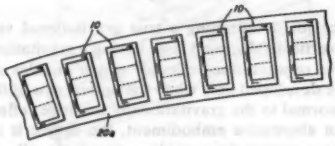
APPARATUS AND METHOD FOR PROCESSING FLEXIBLE MEDICAL SLIDES

Jacques B. Wallach, 18 Dartmouth Rd., Cranford, N.J.

Filed Apr. 8, 1971, Ser. No. 132,317

Int. Cl. G01n *1/00, 21/16, 31/00*

U.S. Cl. 356—36 **16 Claims**



A medical specimen, such as a Pap smear, blood or bacteria sample, is placed on a thin transparent flexible slide which is transmitted to a processing laboratory. At the laboratory, the slides, in accordance with illustrative embodiments of my invention, are affixed to one another or to an elongated flexible carrier means and then wound on a reel. A plurality of such reels are typically loaded on top of one another into a vertical processing tank which is filled sequentially with chemicals and stains as required. Subsequently, the reel is removed from the tank and the slides are microscopically screened to detect diseases such as cancer and the like.

3,764,216

INTERFEROMETRIC APPARATUS

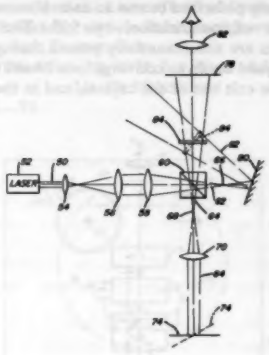
David C. Bliek, Macedon; Kenneth A. Snow, and Richard E. Vandewarker, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 631,797, April 18, 1967, abandoned. This application Mar. 2, 1971, Ser. No. 120,338

Int. Cl. G01b *9/02;* **H01s** *3/00*

U.S. Cl. 356—106 **11 Claims**

An interferometer utilizing holography for object comparison comprises a laser for generating a laser beam for dividing into a reference beam and a test beam. The beams are subsequently recombined to provide an interference pattern. Standard reflective or transmitting objects are positioned in the test beam and a permanent holographic recording of the interference pattern is made. Objects to be tested or compared to the standard are substituted for the standard. A second interference pattern is developed by radiation



reflected or transmitted through the test object, the reference beam, and the reconstructed waveforms of the prior interference pattern recorded in the hologram.

3,764,217

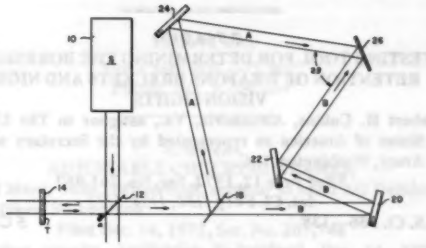
PULSED COHERENCE LENGTH MEASUREMENT DEVICE

Raymond A. Patten, Oxon Hill, Md., and Jerry A. Blodgett, Annandale, Va., assignors to the United States of America as represented by the Secretary of the Navy

Filed June 16, 1972, Ser. No. 263,487

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 **4 Claims**



A method for measuring the coherence length of laser light using only a single laser pulse. The light from a single laser pulse is divided into two beams which are then projected at the same angle θ (measured from the normal) onto the same areas on a photographic film to form interference fringes. The film is then developed, placed on a translating platform and passed through the beam of a CW laser, a portion of the beam being diffracted by the interference fringes recorded on the film. The distance, W, between points on the same interference region which are one-quarter of the highest intensity in that region, is measured and the coherence length is calculated from the formula $L = w/2 \sin \theta$.

3,764,218

LIGHT BEAM EDGE DETECTION

Franz Joseph Schedewie, Boeblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,170

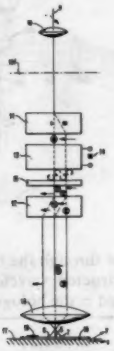
Claims priority, application Germany, Jan. 16, 1971, P 21 02 027.9

Int. Cl. G01n *21/40*

U.S. Cl. 356—118 **36 Claims**

A light beam polarized at 45° to the plane of view is split in a birefringent crystal into two components, o and ao, which are

linearly polarized vertically and parallel to the plane of view respectively. An electro-optic element energized by a High Frequency source transforms the components into two oppositely circularly polarized beams so as to alternately change their direction of polarization by 90°. The alternately polarized beams are simultaneously passed through a second birefringent crystal so as to converge one beam to the other beam at a single exit site of the crystal, and in the other con-



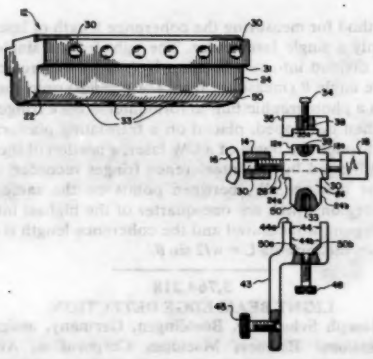
figuration of rotated polarization, so as to diverge the other beam so that the two beams exit at two spaced sites of the crystal spaced about the first exit site. This alternately provides a single central beam and two outer beams. When an edge separating a surface having areas of two different optical properties is brought into the range of the alternating light beams, the change in their intensities is employed to precisely locate the edge by the rate of change in intensities.

3,764,219

TESTING TOOL FOR DETERMINING THE BORESIGHT RETENTION OF WEAPONS BRACKETS AND NIGHT VISION SIGHTS

Robert H. Collins, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 12, 1972, Ser. No. 261,857
Int. Cl. F41g *1/38, 1/54, 3/32*
U.S. Cl. 356—138 **5 Claims**



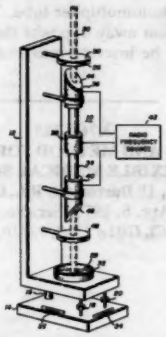
A testing tool that includes a light weight, highly accurate telescope and supplemental weights used to duplicate the weights of various night vision sights. The testing tool is mounted on a weapons adapter bracket for testing the accuracy of either or both the sight and the bracket. The supplemental weights include a main body block and auxiliary side weights in which the auxiliary side weights are bolted traversely through the main body block. The telescope is connected to one side of the main body block. The side of the main body block opposite the telescope is bottomed out on the bottom and beveled edges of a rectangular channel in a weapons adapter bracket. The weapons adapter bracket is connected to a weapon.

3,764,220

ALIGNMENT APPARATUS USING A LASER HAVING A GRAVITATIONALLY SENSITIVE CAVITY REFLECTOR

Kenneth W. Billman, Mountain View, Calif., and Eugene T. Leonard, Quincy, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 30, 1971, Ser. No. 167,719
Int. Cl. G01b *11/26;* **H01s** *3/10*
U.S. Cl. 356—153 **7 Claims**



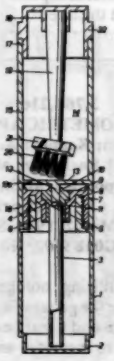
A device for determining a true gravitational vertical including a vertically disposed laser having a gravitationally sensitive lower regeneration reflector which enables an output beam to be developed only when the optical axis of the laser is disposed normal to the gravitationally sensitive reflective surface. In an alternative embodiment, the device is combined with a servo system to provide a gravitationally stabilized horizontal platform.

3,764,221

DEVICE FOR APPLICATION OF PASTE-LIKE OR LIQUID PRODUCTS

Therese Genevieve Solenghi, 34 rue de Provence, Paris 1X, France

Filed Feb. 11, 1972, Ser. No. 225,451
Int. Cl. A46b *11/02*
U.S. Cl. 401—129 **8 Claims**



The invention relates to an application for paste-like or viscous products such as cosmetics, medical ointments, lip-

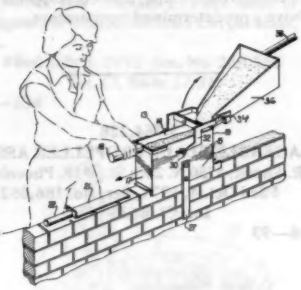
sticks and the like. The application includes a reservoir with a discharge opening therein which opens onto a surface formed as a basin, and a body having a reversible end cap mounting applying member. When not in use the body fits on to the reservoir and has a pin to engage within the discharge opening and close the reservoir, and the applying member is hermetically enclosed within the body. When in use the applying member extends from the body which is removed from the reservoir to open the discharge opening and allow the product to be discharged into the basin.

3,764,222

MANUALLY OPERABLE MORTAR SPREADER FOR BRICK LAYERS

William Herman Orthman, P.O. Box 45, Holdrege, Nebr.

Filed Oct. 1, 1971, Ser. No. 185,737
Int. Cl. E04g *21/20*
U.S. Cl. 401—261 **6 Claims**



A manually operable mortar spreader for laying bricks or blocks, having a housing with an open top hopper with a movable rectangular bottom, front, side and rear walls, the side walls fitting over a base on which the bricks are to be laid, having at least one vertical downward extension, a handle attached to the front or rear wall of the hopper for manually and slidingly transporting the hopper over the base; a mortar dispensing gate between the rear end of the bottom and the bottom of the adjacent wall; and means to control the mortar height of the dispensing gate over the base to control the thickness of the mortar left over the base in the wake of the sliding transportation movement of the hopper. The movable bottom is provided with another handle. The means to control the gate are provided either by vertically sliding the rear wall itself or a gate attachment thereof relative to the base to be laid; while simultaneously means are provided to pull the bottom itself away from the housing, leaving the bottom of the housing open, and permitting the mortar in the hopper to rest and to press on the base to be laid. In a second embodiment, the bottom of the hopper is partly masked to prevent the mortar from filling the hollow centers of the bricks or blocks.

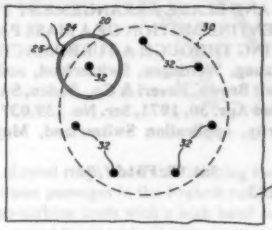
Optionally, a manually operated poker bar is provided to permit pushing mortar between the crevice of adjoining bricks. Optionally means are provided to produce the layer of mortar at an angle to horizontal in the longitudinal direction of travel of the spreader. Optionally, means are provided to exchange filled and empty spreaders between a helper who fills it and the operator at a distance and possibly operating at different levels.

3,764,223

METHOD FOR LOCATING AND REMOVING MANHOLE COVERS

Frank J. Lucero; Jack A. Lucero, both of Denver, and Gary R. Weekly, Littleton, all of Colo., assignors to Lee Way Trenching, Inc., Denver, Colo.

Filed Feb. 18, 1971, Ser. No. 116,567
Int. Cl. E01c *23/14*
U.S. Cl. 404—79 **7 Claims**



The presence of a manhole cover in a roadbed under a layer of non-magnetic asphalt is detected and accurately located by a method in which magnetic detection apparatus have a detection alarm and employing inductive search coils is operative to sense the proximity of a metallic object, at least portions of which are magnetically detectable, through changes in coil inductance. The detectiom method and apparatus is capable of determining the thickness of the asphalt layer and heat is employed to efficiently melt through the asphalt in such a way as to permit removal of the cover without unnecessarily damaging the asphalt surface. Thereafter, the cover may be replaced in the road bed and resealed in place.

ERRATUM

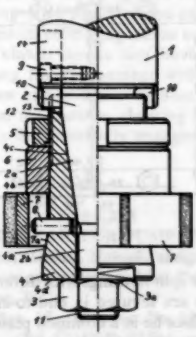
For Class 408—75 see:
Patent No. 3,764,204

3,764,224

ADJUSTABLE CHUCKING REAMER

Adolf Merz, Olten, Switzerland, assignor to Merz AG Dulliken, Dulliken, Switzerland

Filed Dec. 14, 1971, Ser. No. 207,748
Claims priority, application Switzerland, Dec. 16, 1970, 18626/70
Int. Cl. B23b *31/02*; B23d *77/08*
U.S. Cl. 408—231 **7 Claims**



The invention relates to an adjustable chucking reamer having a reamer shank and an interchangeable, sleeve-like reamer head which is continuously corrugated in cross-section and is

provided with cutting edges arranged at shoulders formed by radial projections at the reamer head, and which is fixed resiliently about a conical expansion member between the said expansion member and a displaceably arranged sleeve supported on a nut, and is adapted to be radially expanded by axial displacement relatively to the expansion member, and which is supported on the expansion member only with a front conical portion of its internal corrugation crests.

3,764,225

TECHNIQUE AND BLADE ARRANGEMENT TO REDUCE THE SERPENTINE MOTION OF A MASS PARTICLE FLOWING THROUGH A TURBOMACHINE

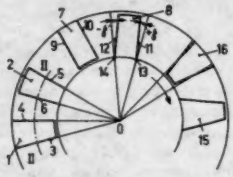
Lang Shuen Dzung, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Co., Baden, Switzerland

Filed Apr. 30, 1971, Ser. No. 139,037

Claims priority, application Switzerland, May 27, 1970, 7241/70

Int. Cl. F01d *1/04*

U.S. Cl. 415—193 **1 Claim**



An axial-flow turbo-machine where, in order to reduce serpentine motion of the mass particles of the working medium in flowing through the machine, the fixed and movable blades are shaped in such manner that radial forces are induced in the working medium which compensate, at least in part, the radial forces resulting from the peripheral component of the flow velocity which are responsible for the serpentine motion.

3,764,226

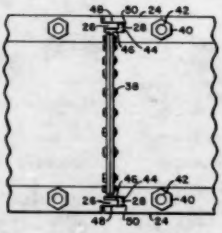
PILOTING DEVICE FOR SPLIT HOUSINGS HAVING DIFFERENT THERMAL COEFFICIENTS OF EXPANSION

Lawrence R. Matto, Shelton, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Apr. 5, 1972, Ser. No. 241,252

Int. Cl. F04d *29/40*

U.S. Cl. 415—219 R **13 Claims**



A pair of annular split housings with different coefficients of thermal expansion are secured in end-to-end relationship so that their parting lines lie in a common plane. A series of tabs on one housing extends across the end-to-end junction into recesses in the adjacent housing. The dimensional relationship between the tabs and certain walls of the recesses are predetermined so that the axes of the housings are aligned within the common plane for different temperatures.

3,764,227

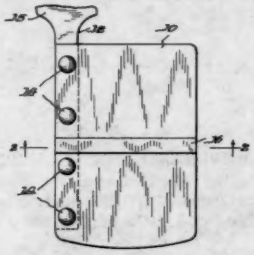
TEMPERATURE SENSITIVE FAN

R. Richard Albertzart, Okemos, Mich., assignor to Hayes-Albion Corporation, Jackson, Mich.

Filed Aug. 11, 1972, Ser. No. 279,925

Int. Cl. F04d *29/36, 29/58*

U.S. Cl. 416—39 **2 Claims**



A temperature sensitive fan having memory material which assumes its memorized shape that corresponds to a pitched fan at or above a predetermined temperature.

3,764,228

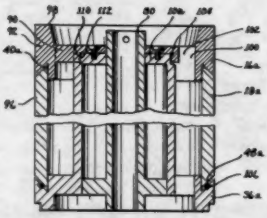
REPLACEABLE BLADE PROPELLER ASSEMBLY

Frederick R. Shook, 4750 N. 28th St., #18, Phoenix, Ariz.

Filed Oct. 4, 1971, Ser. No. 186,052

Int. Cl. B63h *1/20*

U.S. Cl. 416—93 **4 Claims**



The disclosure teaches a novel means for detachably mounting blades on a propeller hub. The blades can be assembled on the hub, and blade replacements can be made, following simple instructions and without special training. The novel structure has various advantages which are also disclosed.

3,764,229

HELICOPTER BLADE PITCH LOCK

Donald L. Ferris, Newtown, and Luigi Vacca, Milford, both of Conn., assignors to United Aircraft Corporation, Hartford, Conn.

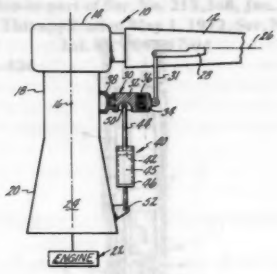
Filed Feb. 18, 1972, Ser. No. 227,359

Int. Cl. B64c *27/50*

U.S. Cl. 416—114 **4 Claims**

A helicopter blade pitch lock in which the locking takes

place in the pitch change servos which are connected to the swashplate so as to vary blade pitch. The locking occurs by



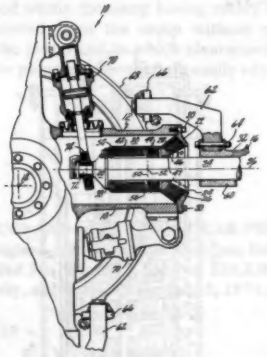
locking the fixed and movable members of the servo to one another, thereby locking the blade in pitch.

3,764,230

ARTICULATED HELICOPTER ROTOR UTILIZING PLURAL ELASTOMERIC BEARINGS FOR ARTICULATED SUPPORT OF THE BLADE FROM THE ROTOR HUB

Robert C. Rybicki, and William F. Paul, both of Trumbull, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 5, 1972, Ser. No. 268,962
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 **31 Claims**



An articulated helicopter rotor in which the blade is supported for articulated motion from the rotor by elastomeric bearings and including an elastomeric shear bearing adapted to take rotor in-plane and rotor out-of-plane shear loads.

3,764,231

FRANCIS RUNNER AND METHOD FOR MANUFACTURE THEREOF

Takeo Hachiya, Susumu Naganuma, and Tomotaka Umino, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 3, 1972, Ser. No. 268,702
Int. Cl. F01d *5/04*
U.S. Cl. 416—186 **8 Claims**

A Francis runner and a method for manufacture the same are provided in which the openings or notches are formed in the shroud ring in each water passage between the adjacent blades and in spaced apart relation therewith in order to facilitate the finishing of the inner surfaces of the water passages in the runner. The openings and notches are closed with the cover plates by welding after the finishing step has been completed in such a manner that the inner and outer surfaces of the cover plates may be in coplanar relation with

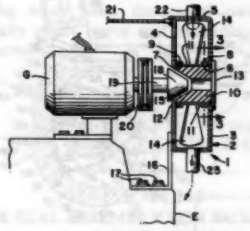
those of the shroud ring. Thus, the finishing the inner surfaces of the long water passages in the Francis runners of water turbine or pump-turbine units with a high head or high lift and a slow specific speed having a long water passage length may be much facilitated.

3,764,232

VACUUM CLEANER FOR VEHICLES

John R. Brown, 12808 Livingston Rd., Fort Washington, Md.

Filed Nov. 22, 1971, Ser. No. 201,023
Int. Cl. F04b *9/02*; F16d *13/24*; B60s *1/64*
U.S. Cl. 417—319 **6 Claims**



A vacuum cleaner for vehicles comprising a vacuum producing means on a forward part of the engine of the vehicle closely adjacent an electric generator on the engine, said vacuum producing means including a fan in a casing, said electric generator having drive clutch means extending outwardly therefrom, said vacuum producing means mounted closely adjacent said drive clutch means and having a drive clutch means in the casing for engagement with the drive clutch means so that when engaged, the vacuum producing means produces a vacuum for vacuum cleaning the interior of the vehicle, and means for selectively engaging and disengaging said clutch means.

3,764,233

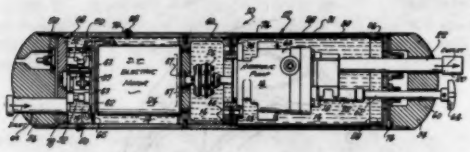
SUBMERSIBLE MOTOR-PUMP ASSEMBLY

Alvah T. Strickland, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 15, 1971, Ser. No. 198,679
Int. Cl. F04b *35/04*
U.S. Cl. 417—414 **8 Claims**

A submersible motor-pump assembly including: a reservoir casing which is adapted to contain a hydraulic fluid; a hydraulic pump mounted within the casing, the pump having an inlet

which is located within the casing and an outlet which is extended through the casing; an electric motor for purposes of



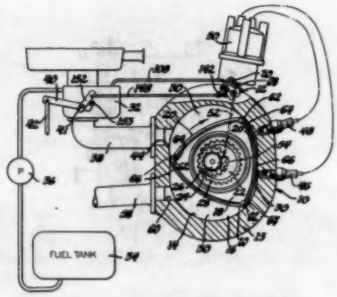
driving the aforementioned hydraulic pump; and the casing having means for equalizing the pressure within the casing with respect to ambient pressure.

3,764,234

ROTARY ENGINE OIL METERING PUMP

Robert E. Morgan, and James D. Palma, both of Grand Rapids, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 26, 1972, Ser. No. 266,450
Int. Cl. F01c *21/04*
U.S. Cl. 418—84 3 Claims



A rotary engine is provided with an oil metering pump having a stepped plunger and accommodating bore arrangement with a variable input speed drive from the engine's output which changes plunger strokes per unit time and a variable cam follower arrangement that is controlled in accordance with engine throttle opening to alter the length of plunger stroke per plunger revolution.

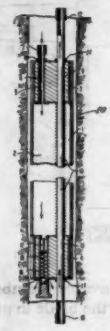
3,764,235

PNEUMATIC PUMP

Veit Bittermann, Stuttgart-Uhlbach, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

Filed Dec. 27, 1971, Ser. No. 212,389
Int. Cl. F04f *1/06, 3/00;* E21b *33/12*
U.S. Cl. 417—118 7 Claims

A pneumatic pump device for the removal of water from holes inlcuding an inflatable cylindrical hollow body of an elastic material sealed off on both ends by sealing elements. A flexible riser is arranged to extend in the axial direction through the hollow body and in sealing contact through both of the sealing elements. First and second bores are provided, one in each of the sealing elements for permitting the entry



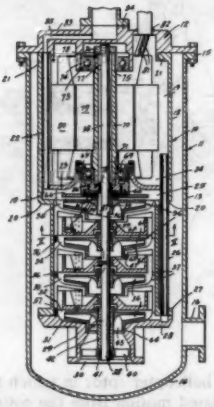
and egress of a gas to and from the hollow body. In one of these bores a valve is installed which is controlled by the internal pressure of the hollow body.

3,764,236

MODULAR PUMP

James C. Carter, Pasadena, Calif., assignor to The J. C. Carter Company, Costa Mesa, Calif.

Filed July 15, 1971, Ser. No. 162,981
Int. Cl. F04b *39/06, 35/04;* F01d *3/00*
U.S. Cl. 417—372 10 Claims



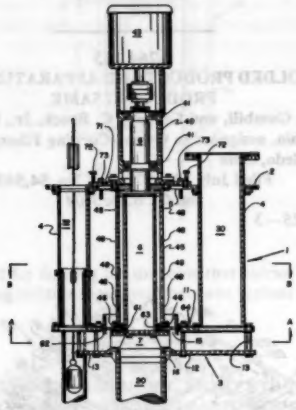
A modular multi-stage pump especially suited for pumping liquids whose external leakage may be hazardous such as liquified gases, including cryogenic fluids, which includes a fully submerged pump and motor unit preferably immersed in a suction pot and sealed with only two external static seals. The unit has a hydrostatic shaft bearing fed with pumpage that also cools the motor and flows back to the first stage discharge. The stages of the pump are in stacked relation and may be increased or decreased in number to develop a desired discharge pressure. The pump and motor unit is encased in a single sleeve casting with a plurality of longitudinal pockets spaced around the periphery thereof housing tubes carrying the pressurized fluids so that the casting is not subjected to the discharge pressure and can be very lightweight. The pump shaft extends through a hollow motor shaft and is keyed to the top end thereof, thereby eliminating a coupling.

3,764,237

ADJUSTABLE SUMP PUMP

George B. Emeny, 575 Highland Ave., Salem, Ohio

Continuation-in-part of Ser. No. 218,348, Jan. 17, 1972, abandoned. This application May 1, 1972, Ser. No. 248,819
Int. Cl. F04b *17/04*
U.S. Cl. 417—424 2 Claims



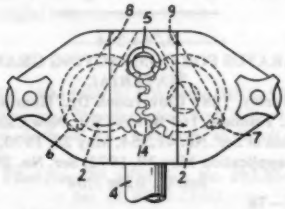
Vertical sump pump having a pumping chamber and impeller positioned within the sump having rotary elements that are easily removed from the sump without removing the remainder of the pump and in which clearances between the impeller and the pumping chamber are easily adjustable.

3,764,238

LIQUID AND AIR MIXING GEAR PUMP

Poerio C. Carpigiani, Anzola, Emilia, Bologna, Italy

Filed Jan. 24, 1972, Ser. No. 220,239
Claims priority, application Italy, Feb. 3, 1971, 12469 A/71
Int. Cl. F01c *1/08*
U.S. Cl. 418—15 2 Claims



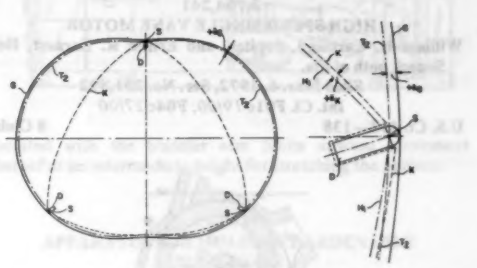
The air intake ports of a liquid and air sucking and mixing gear pump are put into communication with the atmosphere through a collecting tank or chamber, in which the small amounts of foamy liquid-and-air emulsion flowing out from said ports during the stopping time of the pump are collected, and from which the amounts of emulsion are again sucked back into the pump as soon as the pump operation is again started.

3,764,239

ROTARY PISTON ENGINE WITH TROCHOIDAL CONSTRUCTION

Franz Huf, Konstanz, Germany, assignor to Dornier System GmbH, Friedrichshafen/Bodensee, Germany

Filed Dec. 6, 1971, Ser. No. 204,918
Claims priority, application Germany, Dec. 5, 1970, P 20 59 965.9
Int. Cl. F01c *1/02, 19/02*
U.S. Cl. 418—61 3 Claims



This invention relates to an improvement in a rotary piston engine, of trochoidal construction, wherein for pairing reasons the formation of the housing and the piston rotor is based not only upon the trochoid but also upon the inner or outer envelope curve branches being coordinated thereto, and wherein the gas check between two adjacent working spaces or chambers is effected by means of radial packing strips; the improvement comprising that the housing and piston rotor delimitations consist of a pair of parallel curves on the same side, facing away from the radial packing strip, of the gemoetrically exact curve and extending equidistantly with respect thereto.

ERRATUM

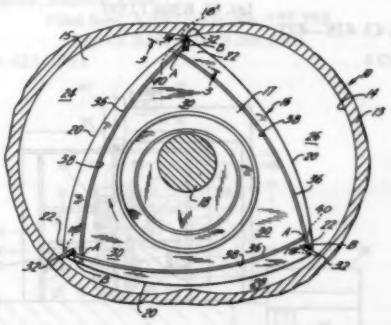
For Class 418—84 see:
Patent No. 3,764,234

3,764,240

SIDE SEAL ASSEMBLY FOR ROTARY PISTON MECHANISMS

Michael J. Griffith, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 25, 1972, Ser. No. 247,451
Int. Cl. F01c *19/00*
U.S. Cl. 418—120 11 Claims



The side seal assembly for sealing the interstices between each of the side faces of a rotary piston and the adjacent end wall surfaces of the housing of a rotary piston mechanism and isolating the working chambers of the mechanism from each

other and the crankshaft area comprises a plurality of abutting side seal strips disposed in grooves in the rotor side face located near the peripheral surfaces of the rotor and extending between each of the apex portions of the rotor. Each side seal strip is constructed and arranged to abut, along its length, the end wall housing surface and to sealingly abut, at one end, the side of an adjacent side seal strip at a point near, but spaced from, one of the apex seal means and, at the opposite end, capable of abutment against another of the apex seal means of the rotor.

3,764,241

HIGH SPEED SINGLE VANE MOTOR

William H. Cartland, Jupiter, and Ernest R. Earnest, Hobe Sound, both of Fla.

Filed Mar. 6, 1972, Ser. No. 231,892

Int. Cl. F01c *19/00*; F04c *27/00*

U.S. Cl. 418—138 **8 Claims**

A single vane motor, for work extraction from the expansion of compressible fluids, comprised of three basic units, a single rotating vane mounted on an output shaft comprising a first rotor, a stationary housing and end plates, a rotating drum, comprising a second rotor, mounted on bearings in the housing, on an axis offset from the axis of the first rotor. A predetermined volume of working fluid is admitted into the cylindrical chamber provided by the housing on each revolution. The pressure of the expanding fluid acts directly on the vane to transmit torque to the shaft, the expansion providing an ever increasing volume behind the vane until an exhaust port is uncovered.

3,764,242

APPARATUS FOR THE PRODUCTION OF GREEN TEST SPECIMENS FROM ARTIFICIAL CARBON

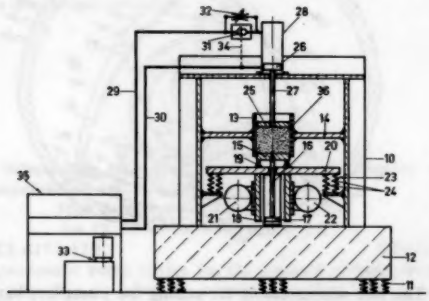
Werner Karl Fischer, Venthone, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 25, 1972, Ser. No. 247,359

Claims priority, application Switzerland, Apr. 28, 1971, 6197/71

Int. Cl. B30b *11/00*

U.S. Cl. 425—427 **1 Claim**



Apparatus for the production of test specimens from green artificial carbon by shaking of a warm granular mass in a stationary mold, the bottom of which is formed by a closure plate vertically movable in the lower part of the mold, which rests on spring elements and can be set in vibration in the vertical direction by means of two oppositely rotating motors and is closable at the top by a counter-plate. The apparatus is distinguished in that said counter-plate is pressable by means of an upper cylinder by oil pressure against the carbon mass by virtue of the installation of a non-return valve and a fine needle valve connected parallel therewith in the oil conduit in such a way that it can follow the variation of height of the compacting mass.

3,764,243

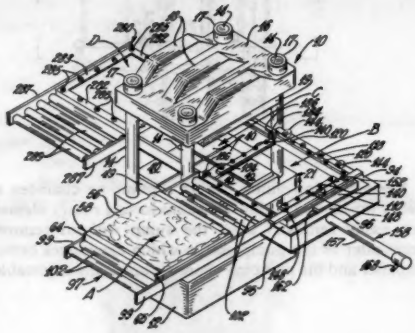
MOLDED PRODUCT AND APPARATUS FOR PRODUCING SAME

Ulysses T. Gambill, and Gregory C. Brock, Jr., both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed July 13, 1970, Ser. No. 54,541

Int. Cl. B29c *3/04*

U.S. Cl. 425—3 **17 Claims**



The disclosure embraces a method of and apparatus for molding a product and the product produced thereby and involves delivering a supported body or mass of material that may be molded such as mineral fibers impregnated with a binder into a contoured molding facility, the body or mass of material being compressed and shaped to the mold contour, the binder set or cured and the molded product removed from the mold concomitantly with the advance of a succeeding supported mass or body of moldable mineral into the molding facility.

3,764,244

APPARATUS FOR COMPACTING GRANULAR MATERIAL

Donald L. Hurley, 1281 Clovernook Dr., Hamilton, Ohio, and Charles R. Talmage, 161 Bowery Rd., New Canaan, Conn.

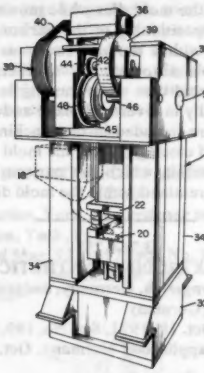
Continuation of Ser. No. 41,354, May 28, 1970, abandoned. This application May 30, 1972, Ser. No. 257,875

Int. Cl. B29c *3/04*

U.S. Cl. 425—78 **31 Claims**

The specification discloses an apparatus for compacting granular material utilizing a die and a lower punch and an upper punch. The upper punch is mounted on a press slide to be reciprocated into and out of the upper end of the die, while the die is floatingly supported and guided in the press and the lower punch mounting is movable in the press between an uppermost ejection position in which a punch mounted thereupon would have its upper end flush with the top of the die and a lowermost fill and compacting position wherein the lower punch is solidly supported on the press bed. A crankshaft in the press has angularly related throws connected to the slide

which supports the upper punch and to a bridge that engages the lower punch mounting from beneath. Resilient cushions



are employed for floating the die table that carries the die and for controlling relative movement between various parts of the press.

3,764,245

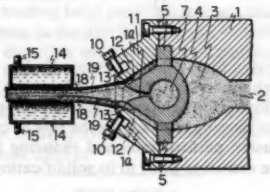
APPARATUS FOR PRODUCING LIGHT STRUCTURAL BOARD OF THERMOPLASTIC RESIN

Fumio Miyamoto, Kodaira City, Tokyo, Japan

Filed May 10, 1971, Ser. No. 141,808

Int. Cl. B29d *7/04*

U.S. Cl. 425—131 **13 Claims**



An apparatus is disclosed which is adapted to produce a light structural board of thermo plastic resin, consisting of a plurality of inside plate and inner and outer layers which are secured together through a number of spaced ribs or partitions which are integral with the outer layers.

3,764,246

TRANSFER ARM FOR BLOW MOLDING APPARATUS

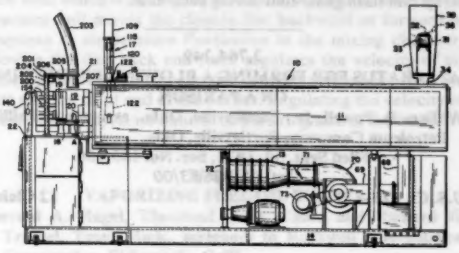
LeRoy L. Mauger, Douglassville, and Robert W. Gilbert, Havertown, both of Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed Nov. 29, 1971, Ser. No. 202,864

Int. Cl. B29d *23/03*

U.S. Cl. 425—135 **9 Claims**

A transfer arm for a blow molding apparatus of the type in which a cold parison is heated in an oven, and then picked up out of the oven by a transfer arm and carried to a blow molding station at which its bottom is held while the parison is stretched upwardly, and after which the mold closes onto the parison to form a container out of the stretched parison, and after which the transfer arm returns to the oven to pick up another heated parison. In moving through its cycle, the transfer arm is moved vertically to lift and lower the parisons and pivoted about an axis to move between the oven and the molding station. A main double acting piston and cylinder effects vertical movement of the transfer arm. A limit switch as-



sociated with the transfer arm limits upward movement thereof at an intermediate height for stretching the parison.

3,764,247

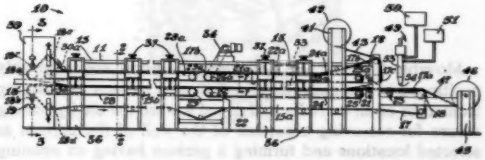
APPARATUS FOR MOLDING HARDENABLE MATERIALS

Walter L. Garrett, Freeland, and Thomas D. Ray, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 55,933, July 17, 1970, which is a continuation-in-part of Ser. No. 731,858, May 24, 1968, abandoned. This application May 30, 1972, Ser. No. 258,064

Int. Cl. B29c *15/00, 17/00*

U.S. Cl. 425—224 **6 Claims**



Hinged endless belts are employed in a continuous casting machine to define a mold cavity closed on all four sides wherein castable materials such as foamable hardenable plastics are continuously shaped without waste.

3,764,248

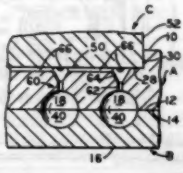
TRANSFER MOLD FOR REDUCING RAM FLASH

Harold E. Hall, Middlefield, Ohio, assignor to Stewart Rubber Company, Bedford, Ohio

Filed Sept. 3, 1971, Ser. No. 177,775

Int. Cl. B29f *3/10*; B29h *1/00*

U.S. Cl. 425—251 **4 Claims**



A ram transfer mold having a plurality of channel areas in the bottom wall extending between and interconnecting the plurality of sprue holes in order to permit raw material to flow laterally therealong as the ram is forced into the reservoir and

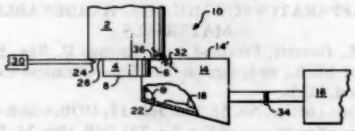
into an extremely close spaced relationship with the bottom wall. The channel areas permit the ram to approach the bottom wall more closely than heretofore possible and reduce the scrap ram flash generated during each heat.

3,764,249

APPARATUS FOR FORMING A BLOWING PIN OPENING ON A PARISON

William D. Powell, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 30, 1971, Ser. No. 185,256
Int. Cl. B26d *3/00*
U.S. Cl. 425—311 **12 Claims**



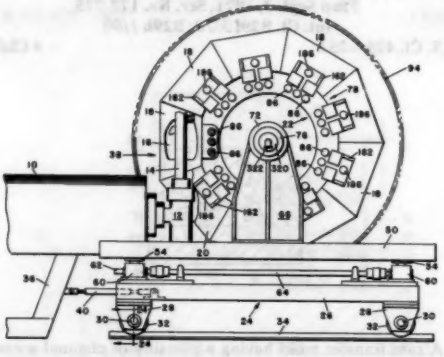
Movable first and second cutting elements are removably positioned in the pathway of a wall of a parison discharging from a die of an extruder and urged toward the die by biasing means for removing a portion of the wall of the parison at selected locations and forming a parison having an opening through the wall thereof.

3,764,250

BLOW MOLDING MACHINE

William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Nov. 1, 1971, Ser. No. 194,635
Int. Cl. B29c *17/04*
U.S. Cl. 425—326 **35 Claims**



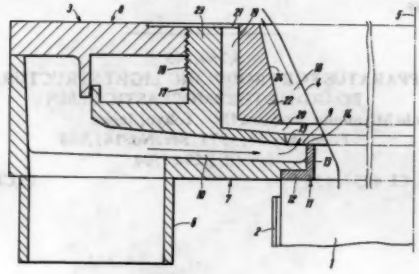
This invention pertains to a machine for manufacturing synthetic resin extrusion products by means which blow a plasticated resinous parison internally to expand it to engage the walls of a mold cavity within separable dies, the parison being discharged from an extruder head vertically upward for reception between the mold dies while moving upwardly and thereby insure the positioning of the parison in substantially straight condition within the die cavity as aforesaid. The machine is operable automatically to enclose the parison between pairs of mold dies while moving in a circular path disposed substantially in a vertical plane and various types of adjustable means are included in the machine to control the position of the mold closing station, the mold opening station, and the duration within which the parison and subsequent molded objects are retained within the mold dies.

3,764,251

DEVICE FOR EXTRUDING SYNTHETIC MATERIAL

Fritz Konerman, Lengerich, Germany, assignor to Bischof und Klein, Lengerich, Germany

Filed Oct. 18, 1971, Ser. No. 189,967
Claims priority, application Germany, Oct. 17, 1970, P 20 51 041.2
Int. Cl. B29f *3/08*
U.S. Cl. 425—326 **5 Claims**



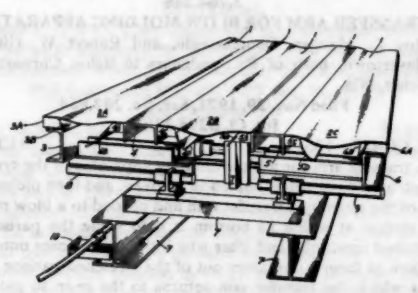
A blower ring for a tube extrusion die has passage means through which secondary cooling air from the environment is induced to flow into the cooling gas stream issuing from the blower orifice thereby intensifying the rate of cooling, increasing the extrusion performance and reducing the mechanical loading of the extrusion prior to its solidification.

3,764,252

APPARATUS FOR THE MANUFACTURE OF CONTOURED ASBESTOS SHEET

Joseph B. Schulte, St. Louis, Mo., assignor to GAF Corporation, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 169,948
Int. Cl. B29c *17/00*
U.S. Cl. 425—383 **3 Claims**



A corrugated asbestos cement forming machine including a flat horizontally-movable table having flexible resilient mem-

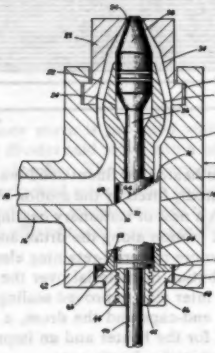
brane sections as well as rigid portions is provided to accept a flat wet asbestos cement sheet. Such sheet is placed upon the entire table and as the edges of the separate flexible membrane sections are urged together in an accordian fashion, the membrane sags and thereafter gravity causes the wet asbestos cement sheet to assume the shape and contour developed by the sagging flexible membrane. Rigid support members beneath the flexible membrane sections assure the desired contour of the asbestos cement sheet.

3,764,253

SIDE FLOW DIVERTER FOR PARISON EXTRUDING HEAD

William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Mar. 12, 1971, Ser. No. 123,595
Int. Cl. B29f *3/04*
U.S. Cl. 425—466 **8 Claims**



A parison extruding head provided with an inlet at one side thereof, transverse to the axis thereof, and including a diverter to change the direction of movement of plasticated resin to flow axially of the extruder head from the entering direction. The diverter effects smooth transition in the path of movement of such plasticated resin without impeding or entrapping any of the same, thereby avoiding burning of the resin or other deleterious effects therein.

ERRATUM

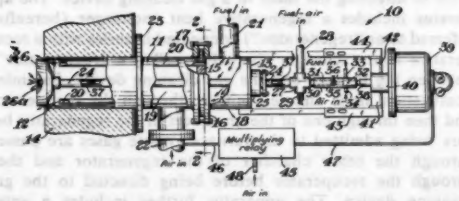
For Class 431—81 see:
Patent No. 3,764,181

3,764,254

BURNER UNIT FOR CARBONACEOUS GAS WASTE

Frank L. Gladney, Freeport, and Michael L. Turner, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 24, 1972, Ser. No. 274,217
Int. Cl. F23n *1/02*
U.S. Cl. 431—89 **3 Claims**



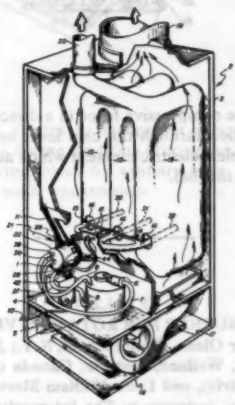
A burner unit is disclosed which is particularly suitable for use with a furnace for burning carbonaceous waste gases. The air and fuel gas mixture for igniting the burner is mixed at the front end of the burner, to prevent "flashback" into the burner body. Mounted on the front end of the burner is a closure disc, which is connected into an air operator unit. The air operator unit moves the closure disc backward or forward in response to air pressure fluctuation in the mixing chamber. Moving the disc back and forth regulates the velocity of air which passes through an annular opening defined between the disc and the front end of the burner. Regulating the velocity of the air enables precise control of the firing rate of the burner.

3,764,255

VAPORIZING FUEL OIL BURNER

Jerrold A. Hagel, Thousand Oaks, Calif., and Richard H. Tromel, Troy, Mich., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed July 13, 1971, Ser. No. 162,076
Int. Cl. F23d *11/44*
U.S. Cl. 431—236 **17 Claims**



A small pilot flame adjaent a fuel oil atomizer burns a portion of the liquid fuel sprayed from the atomizer thereby inducing sufficient air through air aspiration ports in a housing to maintain the flame within the housing, the resultant heat generated thereby serves to vaporize the remaining fuel oil droplets, the vaporized fuel oil then being directed out of the housing for subsequent burning in a primary combustion chamber downstream of the pilot flame.

3,764,256

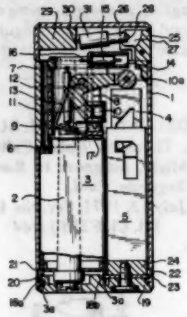
PIEZOELECTRIC GAS LIGHTER

Nobuyoshi Moriya, Urawa, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan

Filed Sept. 14, 1972, Ser. No. 288,990
Claims priority, application Japan, Sept. 28, 1971, 46/88405; Dec. 14, 1971, 46/118799
Int. Cl. F23q *2/00*
U.S. Cl. 431—255 **7 Claims**

A piezoelectric gas lighter having a casing; a fuel reservoir disposed within said casing; a burner valve associated with the fuel reservoir for permitting the egress of fuel therefrom; a piezoelectric generator housed in the casing and having a piezoelectric element for generating a high voltage in response to a compressive force and force means arranged in alignment with the piezoelectric element to exert the compressive force thereon; a block member disposed on the fuel reservoir; a thumb piece pivotally supported on the block member and rotatable in perpendicular relation to the movement of the force means of the piezoelectric generator; and a cam lever operatively associated with the thumb piece to transmit the movement of the thumb piece to the force means of the

piezoelectric generator; and spark means connected to the piezoelectric element for igniting the fuel emitted by the burner valve in response to the high voltage whereby the rotation of the thumb piece causes the piezoelectric element to be



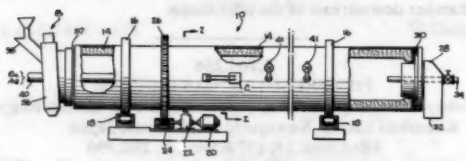
applied with the compressive force in a direction perpendicular to the rotation through the cam lever to generate a high voltage in the piezoelectric element which actuates the spark means to ignite the fuel.

3,764,257

SIDE BURNER FOR ROTATING VESSELS

Francisco Omar Olano, Grand Island, N.Y.; James Keith Fordy, deceased, Welland, Ontario, Canada (by Audrey Jean Fordy, executrix), and Louis William Martel, Oakville, Ontario, Canada, assignors to The International Nickel Company, Inc., New York, N.Y., by said Olano and said Martel

Filed June 21, 1971, Ser. No. 154,819
Claims priority, application Canada, July 8, 1970, 087,697
Int. Cl. F27b 7/10
U.S. Cl. 432—19 13 Claims



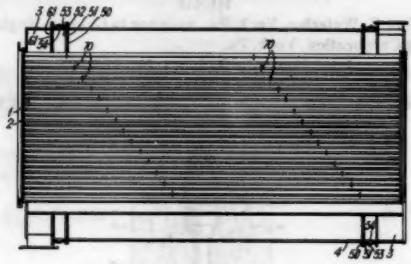
Burners, particularly oil burners adaptable for use in rotary furnaces, are disclosed. The burners are mounted on the furnace walls and include a burner of conventional design with a burner tunnel that is mounted in the rotary furnace. The burner tunnel is made of a refractory material and is of such thickness that its interior is maintained incandescent, e.g., maintained at a temperature of at least about 2,400° F., (and preferably 2,800° F.). Fuel and combustion air can be preheated by passage through the furnace at the charging end in a series of tubes which are parallel to the longitudinal axis of the furnace for a preselected length of the furnace and then passed out of the furnace ultimately to the burner.

3,764,258

DEVICE FOR HEATING OR DRYING DUST-LIKE MATERIAL

Joachim Brandt, Rothemuhle, Germany, assignor to Apparatebau Rothemuhle Brandt & Kritzler, Rothemuhl, Germany

Filed Dec. 27, 1971, Ser. No. 212,323
Claims priority, application Germany, Dec. 28, 1970, P 20 64 132.1; Aug. 28, 1971, P 21 41 825.7
Int. Cl. F27b 7/10
U.S. Cl. 432—107 14 Claims



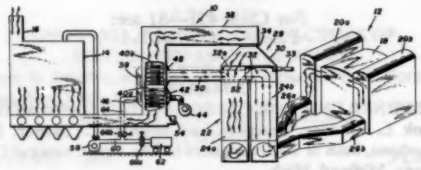
In a rotating drum heater for fluent solid material in which the material is repeatedly lifted by the motion of the drum and allow to fall through a nest of stationary heating tubes, with a slight component of motion along the drum and tubes, lifting blades have two or more material-retaining elements to assist uniformity of distribution of material over the nest of tubes. Also described are, inter alia, improved sealing arrangements between stationary end-caps and the drum, a self-contained transporting chassis for the heater and an improved arrangement for recycled and mixing heating gas.

3,764,259

GAS TREATING APPARATUS

Frank A. Alexander, Jr., West Boylston, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Continuation-in-part of Ser. No. 220,131, Jan. 24, 1972. This application June 16, 1972, Ser. No. 263,402
Int. Cl. F27d 17/00
U.S. Cl. 432—180 6 Claims



For use with a regenerative furnace, an apparatus for heating an incoming flow of combustion air while simultaneously cooling the waste gases being discharged from the furnace prior to directing the same to a gas cleaning device. The apparatus includes a regenerative heat exchanger (hereafter referred to as "regenerator") connected in series with a recuperative heat exchanger (hereafter called a "recuperator") between the furnace and the gas cleaning device. Incoming combustion air is directed initially through the recuperator and then through one of the chambers of the regenerator before being admitted to the furnace. Waste gases are passed through the other chamber of the regenerator and then through the recuperator before being directed to the gas cleaning device. The apparatus further includes a valve mechanism for simultaneously reversing the flow of waste gases and combustion air through the chambers of the regenerator.

3,764,260

BLAST FURNACE STOVE

Marvin O. Smith, Jr., Bethlehem, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Aug. 15, 1972, Ser. No. 280,914
Int. Cl. F23m 9/00
U.S. Cl. 432—217 4 Claims

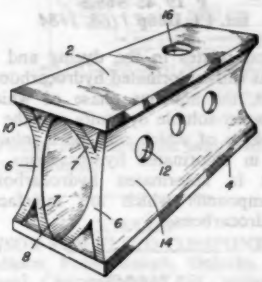
A blast furnace stove is provided with a plate steel wall which partially divides said stove into a combustion chamber and a checker chamber. The checkerwork is supported on a plurality of interlocked grids, which in turn is supported on a plurality of interlocked girders secured to columns disposed in housings rigidly affixed to the floor of said checker chamber.

3,764,261

REFRACTORY SANITARY WARE SETTER

Brian B. Christman, New Wilmington, Pa., assignor to The Joseph Dixon Crucible Company, Jersey City, N.J.

Filed May 18, 1972, Ser. No. 254,507
Int. Cl. F27b 21/00
U.S. Cl. 432—258 6 Claims



The invention relates to means for supporting ceramic materials in a kiln during the firing process, and more particularly to a supporting block for sanitary ware, which block is capable of being made by extrusion.

CHEMICAL

3,764,262
PROCESS FOR THE DYEING AND PRINTING OF TEXTILE MATERIALS

Dietrich Hildebrand, Odenthal, and Helmut Kirschnek, Leverkusen-Schlebusch, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,514
Claims priority, application Germany, Sept. 11, 1969, P 19 45 965.5
Int. Cl. D06p *1/68, 1/84*
U.S. Cl. 8—84 12 Claims

The invention relates to the dyeing and printing of textile materials with chlorinated hydrocarbon/water dyestuff emulsions, the aqueous phase of which contains a solution of water-soluble dyestuffs and the chlorinated hydrocarbon phase of which may be a solution of dyestuffs soluble in chlorinated hydrocarbons, and to an after-treatment in chlorinated hydrocarbon solutions containing compounds which are interface-active in chlorinated hydrocarbons.

3,764,263
PERMANENT PRESS FABRIC RESIN FROM CROTONYLIDENEDIUREA-GLYOXAL-FORMALDEHYDE AMINOPLAST MATERIAL

Thomas M. Powanda, Middlesex, Lawrence B. Holzman, West Orange, and James E. Tracy, Bernardsville, N.J., assignors to Celanese Corporation, New York, N.Y.

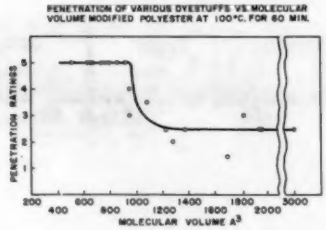
No Drawing. Filed Apr. 20, 1971, Ser. No. 135,781
Int. Cl. C07d *51/42;* D06m *15/54, 15/58*
U.S. Cl. 8—115.7 7 Claims

Crotonylidenediurea is reacted with glyoxal and the resulting adduct methylolated with formaldehyde to produce the corresponding trimethylolated derivative which exhibits very desirable properties as a permanent press resin for fabrics.

3,764,264
PROCESS FOR DYEING POLYESTER FIBERS WITH DISPERSE DYESTUFFS

Clarence A. Bowers, James P. Kimbrell, and James R. Williamson, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.

Filed May 25, 1970, Ser. No. 39,967
Int. Cl. D06p *3/54*
U.S. Cl. 8—179 3 Claims

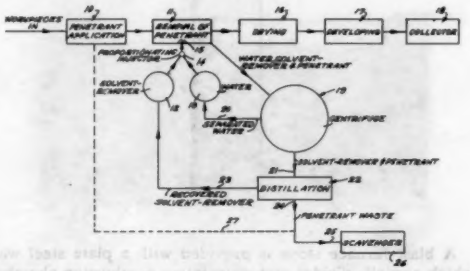

PENETRATION OF VARIOUS DYESTUFFS VS. MOLECULAR VOLUME MODIFIED POLYESTER AT 100°C. FOR 60 MIN.
PENETRATION RATINGS
MOLECULAR VOLUME A³

Polyester fibers produced from dicarboxylic acids, or reactive derivative thereof, and a glycol, and modified with alkoxy poly(oxyalkylene) glycols may be dyed in a carrier-free disperse dyeing system by using disperse dyes of a molecular volume no greater than that determined by systematic measurement of penetration of dyes of various molecular volume.

3,764,265
METHOD FOR THE REMOVAL OF PENETRANTS IN A CLOSED SYSTEM

Adolf Mlot-Fijalkowski, 2028 N. 77th Ave., Elmwood Park, Ill. 60635

Continuation-in-part of application Ser. No. 800,097, Feb. 18, 1969, now Patent No. 3,607,784. This application Sept. 20, 1971, Ser. No. 181,938
Int. Cl. G01n *19/08, 21/04*
U.S. Cl. 23—230 R 3 Claims

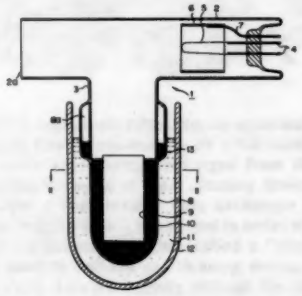


A closed system wherein a colored liquid penetrant such as is used for the penetrant inspection of a workpiece surface for flaws, after being applied to the surface of the workpiece is removed therefrom by spraying thereagainst a liquid mixture of water and a solvent-remover for the penetrant, the resulting admixture is centrifuged to effect the separation of a mixture of solvent-remover, water and penetrant, the separated water returned for re-use and the solvent-penetrant mix is subjected to distillation to recover the solvent-remover for re-use in the system, and also optionally the recovery of the penetrant.

3,764,266
PUMP FOR PRODUCING A VACUUM FREE OF HYDROGEN

Yoshio Murakami, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 7, 1971, Ser. No. 150,656
Claims priority, application Japan, Dec. 11, 1970, 45/109,561
Int. Cl. B01d *53/00;* F04b *37/00*
U.S. Cl. 23—252 R 9 Claims



A pump for producing a vacuum free of hydrogen comprising an incandescent filament for dissociating hydrogen molecules into hydrogen atoms; an oxidizing agent disposed near the filament and having at least its surface

formed of metal oxides so as to oxidize mainly said dissociated hydrogen atoms into H_2O; and an exhaust means for drawing out vapors of H_2O produced on said oxidizing agent.

3,764,267

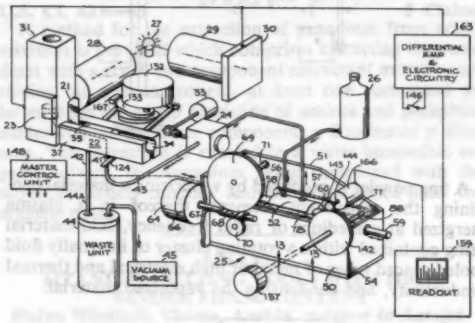
INSTRUMENT FOR MEASUREMENT OF HEMOGLOBIN CONTENT OF WHOLE BLOOD

Andrew F. Farr, South Gate, Calif., assignor to Farr Devices Inc., South Gate, Calif.

Original application Sept. 18, 1968, Ser. No. 760,431, now Patent No. 3,649,204. Divided and this application Sept. 14, 1971, Ser. No. 180,460

Int. Cl. G01n *33/16, 21/20*

U.S. Cl. 23—253 R 5 Claims



A compact instrument for measuring the hemoglobin content of whole blood, particularly arranged for the rapid analysis of a minute sample of a patient's blood supplied, immediately after collection, by a doctor in his own office. The instrument is so arranged that it may be fully automated, to make the hemoglobin determination after a blood sample has been delivered to it, and to provide an analysis for the doctor's use within a few minutes. The instrument utilizes a pump which deliveries to and mixes with the blood sample in a photometer examination cell, an accurately and continuously measured amount of an aqueous reagent, until the volume of reagent added causes the sample to match photometrically a standard sample. The hemoglobin content is directly shown in appropriate units on a meter or readout device at the completion of a cycle. In the fully automated form of the device, a complete analysis cycle leaves the instrument cleaned out and ready to make another analysis upon reception of another blood sample.

3,764,268

CONSTITUENTS-MEASURING CHEMICAL ANALYZER HAVING SAMPLE-PROCESSING CONDUIT FEEDING ALIQUOT-PROCESSING CONVEYOR SYSTEM

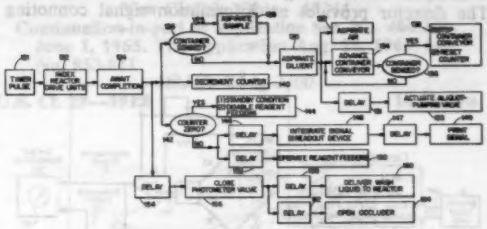
David I. Kosowsky, Newton Centre, Andres Ferrari, Dover, and Carl R. Hurtig, Scituate, Mass., assignors to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of abandoned application Ser. No. 105,805, Jan. 12, 1971. This application Oct. 22, 1971, Ser. No. 191,884

Int. Cl. G01n *1/14, 1/18*

U.S. Cl. 23—253 R 10 Claims

An automatic analyzer of the amounts of different constitutes in fluids takes in a metered volume of fluid sample, and divides the sample into plural aliquots. Each aliquot is delivered to a conveyor-carried container where it is chemically processed to manifest a detectable measure of a constituent in the original sample. The processing is performed in serial succession with the processing of aliquots of other samples, and in parallel with the



processing of other aliquots of the same sample for measuring other constituents.

3,764,269

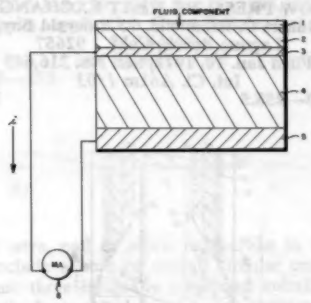
SENSOR FOR FLUID COMPONENTS

Keith B. Oldham, Peterborough, Ontario, Canada, and Leo E. Topol, Canoga Park, Calif., assignors to North American Rockwell Corporation

Continuation-in-part of application Ser. No. 677,501, Oct. 16, 1967. This application Dec. 28, 1971, Ser. No. 213,038

Int. Cl. B01k *1/00*; G01n *27/26, 27/40*

U.S. Cl. 23—254 E 10 Claims



An electrochemical device for sensing fluid components, particularly gases, is comprised of a thin membrane through which the component passes to react with a composition to liberate elemental chlorine, bromine, fluorine or iodine. The chlorine, bromine, fluorine or iodine passes through a porous layer and activates the positive electrode of a solid ionic electrolyte battery of the type: iodine/solid ionic electrolyte/metal electrode, whereby a current flow is generated through a measuring device, the current being proportional to the concentration of the fluid component.

3,764,270

BREATH TESTING SYSTEM

Donald W. Collier, Chicago, Joseph P. Hoppesch, Streamwood, and Anthony C. Mamo, Arlington Heights, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

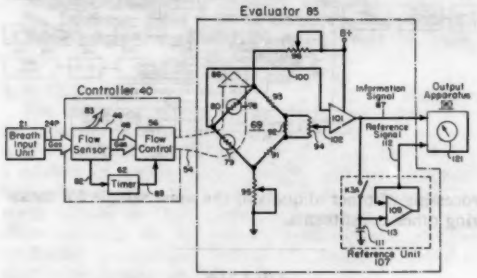
Filed Apr. 23, 1971, Ser. No. 136,778

Int. Cl. A61b *5/00, 10/00*; G01n *33/16*

U.S. Cl. 23—255 E 12 Claims

A gas sample testing system receives deep lung breath from a subject for determining alcohol concentration. A breath input unit delivers a sample of deep lung breath through a controller to an evaluator which includes an alcohol detector. The controller includes a breath pressure sensitive switch and a timer, to insure continuous breath

flow for a predetermined period (e.g., 5 seconds) prior to testing. This arrangement secures a deep lung breath sample for testing. The detector has a Wheatstone bridge with a catalytic resistance leg for contact with the gas sample. The detector provides an information signal connoting



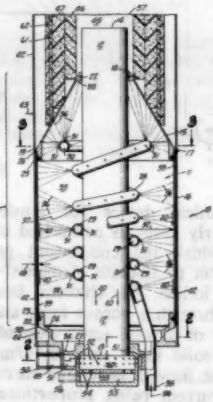
alcohol concentration in the gas sample. This information signal is compared with a stored, previously taken, signal from the same detector to compensate the zero drift. The resultant output signal is displaced on a meter, or used to energize a simple pass-fail indicator.

3,764,271

BLOOD OXYGENATOR IN COMBINATION WITH A LOW PRESSURE HEAT EXCHANGER

Robert C. Brumfield, 73 Emerald Bay, Laguna Beach, Calif. 92657

Filed Jan. 10, 1972, Ser. No. 216,649
Int. Cl. A61m *1/03*
U.S. Cl. 23—258.5 **18 Claims**



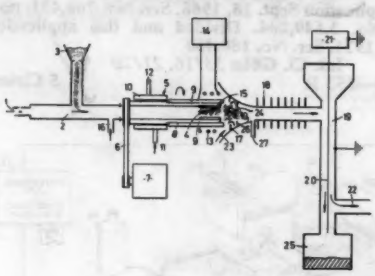
A blood oxygenator has a thin wall heat exchanger shell, having a highly thermally conductive shell wall composition, coaxially exteriorly disposed around a blood oxygen exchange tubular array. The apex of the shell is tightly sealed to the top terminus of the tubular array and the base of the shell is tightly sealed to an exteriorly disposed coaxial oxygenated blood collector manifold. The interior face of the shell wall adjacent to the tubular array is provided with a flowing thin film heat transfer fluid from a heat transfer fluid circulatory member having a fluid inlet and multiple fluid outlets. The heat transfer fluid exchanges thermal energy with the oxygenated blood flowing down the narrow annular volume disposed on the exterior of the heat transfer shell.

3,764,272

APPARATUS FOR PRODUCING FINE POWDER BY PLASMA SUBLIMATION

Henley Frank Sterling, Hunsdon, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,095
Claims priority, application Great Britain, Mar. 24, 1970, 14,107/70
Int. Cl. B01d *7/00*
U.S. Cl. 23—273 SP **7 Claims**



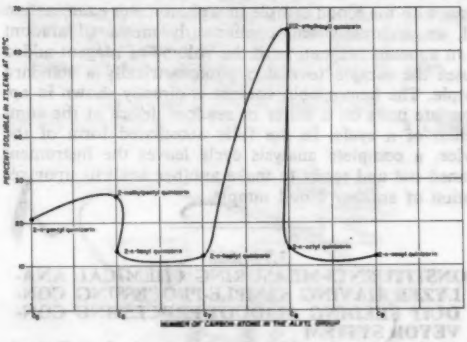
A fine powder is produced by vaporizing a material containing the constituent elements thereof in a plasma energized at a medium or radio frequency, said material being contained within a rotating cluster of internally fluid cooled spaced tubes of metal of high electrical and thermal conductivity, and condensing the vaporized material.

3,764,273

NOVEL MARKER FOR WATER IMMISCIBLE ORGANIC LIQUIDS AND METHOD OF MARKING SAME

Robert J. Turner, Lake Geneva, Wis., and David L. Booth and Richard D. Berry, Crystal Lake, Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Filed June 14, 1971, Ser. No. 152,922
Int. Cl. C09b *1/02*; G01n *21/06*
U.S. Cl. 23—230 R **51 Claims**



A new alkylated quinizarin, 2(2-ethylhexyl) quinizarin, useful for marking water immiscible organic liquids; marked water immiscible organic liquids; and a method of marking said liquids with an additive which may be subsequently extracted from said liquid and easily identified by visual inspection. The method comprises dissolving in the liquid to be marked an additive selected from the group consisting of an alkylated quinizarin, the reaction product of diazotized ortho-tolidine and p-nonylphenol and of diazotized xylidene and p-nonylphenol. The additive is detected by extraction from the marked liquid

by means of a water soluble polar organic solvent containing a base and from 0 to about 75 percent by weight of water to yield a distinctively colored extract which is identified by visual inspection. The identification may be further corroborated by chromatographic separation of the additive or by spectrophotometric analysis.

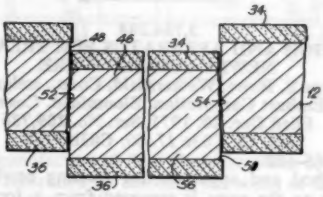
3,764,274
VANADIUM EXTRACTION USING MIXTURE OF ALKYL PHOSPHINE OXIDES AND FLUORINATED β-DIKETONES
Michael F. Lucid, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.
No Drawing. Original application Sept. 4, 1970, Ser. No. 69,949, now abandoned. Divided and this application Nov. 22, 1971, Ser. No. 201,228
Int. Cl. B01d *11/04*; C01g *31/00*
U.S. Cl. 423—63 5 Claims

A method for the extraction of vanadium from acidic mixtures is provided which comprises extracting the vanadium with a novel two component extractant mixture containing, as one component, at least one compound selected from the group consisting of amines and phosphine oxides and, as the other component, a fluorinated β-diketone. The extraction is effected in a water-immiscible organic solvent, the vanadium being complexed with the novel extractant mixture and being extracted into the organic phase.

3,764,275
TITANIUM CUTTING TOOLS WITH HIGH BINDER PHASE CONTENT
Stefan Windisch, Vienna, Austria, assignor to Aerojet-General Corporation, El Monte, Calif.
Filed July 29, 1970, Ser. No. 59,062
Int. Cl. B22f *3/12*
U.S. Cl. 29—282.7 4 Claims

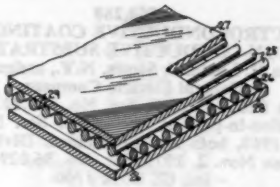
This patent describes novel titanium carbide cutting tool compositions with a high binder phase content comprising the intermetallic compounds MoNi or Mo_6Co_7, said composition containing from about 13.6% to about 30% by weight Mo.

3,764,276
MECHANOCHEMICAL SHEET METAL BLANKING SYSTEM
Lawrence M. Rheingold, Baldwin, and Milton Berlin, Forest Hillls, N.Y., assignors to The Alumet Corporation, Hicksville, N.Y.
Original application Aug. 31, 1967, Ser. No. 664,881. Divided and this application Oct. 22, 1970, Ser. No. 82,973
Int. Cl. B23p *17/00*
U.S. Cl. 29—190 1 Claim



A system of blanking sheet metal by using a punch and die to stamp a part out of sheet metal stock for only a portion of its thickness so that the part is substantially surrounded by a peripheral fracture but is still retained by the stock and projects a fraction of its thickness therefrom, protecting the broad faces of the part with a resist, then chemically etching the stock and part so that the etch attacks the metal at the fracture and thereby loosens the part and finally removing the part from the stock.

3,764,277
METAL COMPOSITES INCLUDING LAYER OF UNWOVEN WIRES
Russell E. Hollis, 213 Fenwick Drive, New Carlisle, Ohio 45344
Continuation-in-part of application Ser. No. 460,309, June 1, 1965. This application Aug. 28, 1969, Ser. No. 853,811
Int. Cl. E04g *2/00*
U.S. Cl. 29—191.6 14 Claims

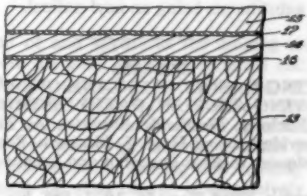


An impact resistant composite structure comprising a network of intermeshed metallic wires having yield strength at least about 200 k.s.i. disposed between at least two sheets or plate members to provide a structure having an excellent strength to weight ratio.

3,764,278
WIRE PRODUCTS
Isin Ivanier, 5509 Westbourne, Montreal, Quebec, Canada
Filed Mar. 19, 1969, Ser. No. 808,594
Claims priority, application Great Britain, Oct. 30, 1968, 51,544/68
Int. Cl. B21c *1/02*
U.S. Cl. 29—193 2 Claims

A metal wire, nail or screw or the like in which the products include a core of overall circular cross-section with at least three integrally connected spirally located ribs. The ribs have a wide root and a characteristic tip. A special reamer is provided for producing a novel die; the die being used for drawing wire therethrough according to a process to produce the products.

3,764,279
PROTECTIVE ALLOY COATING AND METHOD
Henry A. Kmieciak, Chesterland, Ohio, and John D. Gadd, Hummelstown, Pa., assignors to TRW Inc., Cleveland, Ohio
Filed Jan. 11, 1971, Ser. No. 105,183
Int. Cl. B32b *15/20*
U.S. Cl. 29—194 3 Claims



The present invention relates to a superalloy material particularly resistant to corrosive sulfidation attack com-

prising a base nickel or cobalt superalloy having coated thereon a manganese modified aluminide coating. The invention also includes the method of making the above superalloy material by first providing as a base metal a nickel or cobalt superalloy, pre-coating said alloy with manganese to alloy-bond said manganese with said base superalloy, and finally coating said pre-coated superalloy with aluminum to form an overlying manganese modified aluminide coating.

3,764,280

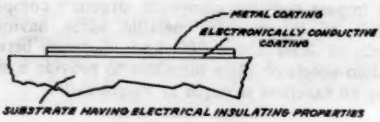
ELECTROCONDUCTIVE COATINGS ON NON-CONDUCTIVE SUBSTRATES

John H. Lupinski, Scotia, N.Y., assignor to General Electric Company

Application Feb. 10, 1969, Ser. No. 800,823, which is a continuation-in-part of application Ser. No. 710,071, Mar. 4, 1968, both now abandoned. Divided and this application Nov. 2, 1970, Ser. No. 86,029

Int. Cl. B01k *1/00*

U.S. Cl. 29—195 **14 Claims**



Powdered oxides or hydroxides, including hydrated oxides, of cadmium, indium, lead and zinc, individually or as mixtures are dispersed in an elastomer. Such dispersions are used to make surface coatings on non-conductive substrates and the metal compound in these coatings is reduced to metal by chemical or electrochemical means to produce surfaces which are highly conductive. When desired, these compositions can be plated to produce metal surfaces on the non-conductive substrate for either decorative or utilitarian purposes.

3,764,281

MOTOR FUEL COMPOSITION

Joseph Brian Biasotti, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,645

Int. Cl. C10l *1/22*

U.S. Cl. 44—62 **15 Claims**

Motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing a detergent amount of a partial ester of a polyethoxylated N-hydrocarbyl-1,3-propanediamine having the formula:

$$R{-}N(CH_2CH_2O R')_2{-}CH_2CH_2CH_2{-}N(CH_2CH_2O R')_2$$

in which R is an aliphatic hydrocarbon radical having from about 8 to 20 carbon atoms and R′ is hydrogen or an acyl radical derived from a fatty acid having from about 8 to 20 carbons, at least one but not more than two of said R′ substituents being an acyl radical.

3,764,282

ENHANCING GASOLINE ENGINE OPERATION BY IMPROVING AIR-FUEL RATIO DISTRIBUTION

Louis E. Furlong, Westfield, Abraham A. Zimmerman, New Providence, and Hugh F. Shannon, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,304

Int. Cl. C10l *1/28*

U.S. Cl. 44—69 **8 Claims**

A mixture of a silicone and a trisubstituted phosphate ester having at least two aryl groups, when added in a minor proportion to a leaded gasoline, will improve the distribution of the air-fuel mixture in the induction system of an aspirated multicylinder gasoline engine run with that blend, thereby increasing operating efficiency.

3,764,283

OPALIZABLE GLASS COMPOSITIONS AND METHODS OF MAKING ARTICLES THEREFROM

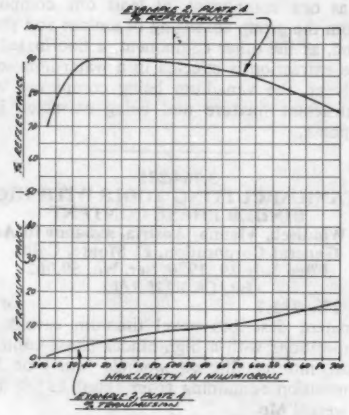
Erwin C. Hagedorn, Oregon, Ohio, assignor to Owens-Illinois, Inc.

Application Apr. 7, 1969, Ser. No. 814,104, which is a continuation-in-part of application Ser. No. 653,357, July 14, 1967. Divided and this application May 4, 1970, Ser. No. 34,452

The portion of the term of the patent subsequent to Feb. 29, 1989, has been disclaimed

Int. Cl. C03b *29/00*

U.S. Cl. 65—33 **16 Claims**



Novel methods and systems of using thermally opalizable glass compositions comprising SiO_2, Al_2O_3, B_2O_3, Na_2O, CaO and MgO to form opal articles having outstanding properties such as low coefficients of thermal expansion and high resistance to thermal shock and chemical attack. The resultant articles, which are converted by new methods to opal articles during forming or by subsequent heat treatments, are useful, for instance, as containers including cookware and dinnerware.

3,764,284

METHOD AND APPARATUS FOR TREATING NEWLY FORMED WARE

George E. Rowe, Wethersfield, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

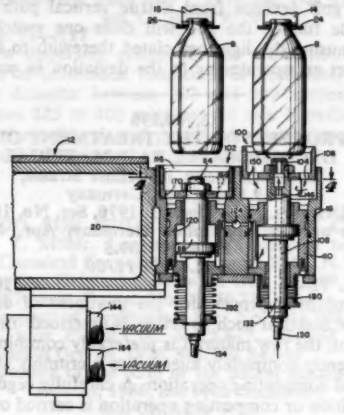
Filed Dec. 20, 1971, Ser. No. 209,736

Int. Cl. C03c *17/00;* **C03b** *9/44*

U.S. Cl. 65—60 **18 Claims**

A method and apparatus for treating newly formed glassware as the ware is removed from a forming machine utilizing a transfer mechanism which holds the glassware in a suspended condition until the ware is deposited on an output conveyor. The transfer mechanism moves the ware in the suspended condition over a spray head which consists of a spray cup which periodically moves upwardly to surround the bottom of the glassware to expose the base of the ware to a timed cooling and metal chloride spray. The newly formed ware is maintained in its suspended condition until it is deposited on the conveyor to prevent distortion of the ware and bottom

checking and the timed spray assists in strengthening the glass and building up a resistance to bottom checking

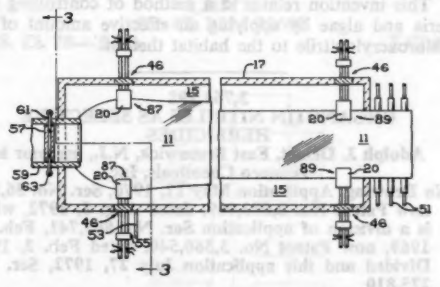


before the newly formed ware first rests under its own weight outside of the mold of the forming machine.

3,764,285
MANUFACTURE OF FLOAT GLASS HAVING CONTROLLED WIDTH

Joseph M. Matesa, Pittsburgh, and Aloysius W. Farabaugh, Verona, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 261,497, June 9, 1972. This application June 9, 1972, Ser. No. 261,493
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A **9 Claims**

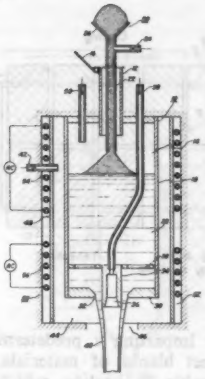


In the manufacture of float glass, the width of the glass formed is controlled by detecting the width of the ribbon after it is substantially cooled and attenuated, and employing the error of the detected width from the target width to control the target width of the ribbon at a point upstream in the process where the ribbon is hot and acting as a viscous liquid, by detecting the width of the ribbon at the upstream point and employing the error of that detected width from its target width to control the target position of a tweel or gate controlling the flow of molten glass ino the float bath and controlling the tweel to ultimately control final ribbon width in a stable manner.

3,764,286
MANUFACTURE OF ELONGATED FUSED QUARTZ MEMBER

Stanley M. Antczak, Mentor, Albert E. Getzendiner, Mayfield Heights, and Marvin C. Riggert, East Cleveland, Ohio, assignors to General Electric Company

Filed Apr. 22, 1971, Ser. No. 136,468
Int. Cl. C03b *5/16*
U.S. Cl. 65—134 **4 Claims**

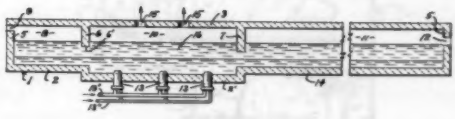


An elongated fused quartz product is disclosed having improved optical transmission and dimensional uniformity which can be produced continuously by a novel process in the form of tubing, rods and the like from purified sand melted in an induction heated furnace. The present process further employs particular hydrogen-helium atmospheres in which the sand particles are continuously melted and drawn from the induction heated furnace to provide the final desired shape. Reheating of the drawn article is practiced to remove entrapped gas for improvement of the final properties.

3,764,287
METHOD OF AN APPARATUS FOR MELTING AND REFINING GLASS

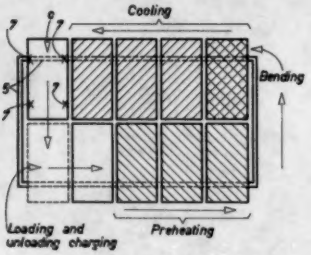
George D. Brocious, R.D. 1, Mayport, Pa. 16240

Filed Mar. 20, 1972, Ser. No. 236,480
Int. Cl. C03b *5/04*
U.S. Cl. 65—136 **6 Claims**



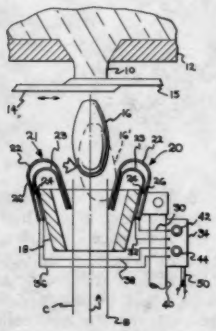
A method of and apparatus for melting and refining glass, wherein the glass charge is admitted and advanced continuously through a furnace containing an induction medium preferably consisting of a molten metal, such as tin, which is maintained in a reduced or molten state by a source of heat submerged therein, and the furnace defining separate pre-melt, melting and refining chambers through which the glass charge is successively advanced in a buoyant molten state over the induction medium common to said pre-melt, melting and refining zones until the molten glass is discharged from the furnace in the desired refined state.

3,764,288
APPARATUS FOR BENDING SHEET MATERIAL
Pierre Gallez, Taravisee, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium
Filed May 26, 1971, Ser. No. 147,040
Claims priority, application Great Britain, June 2, 1970, 26,612/70
Int. Cl. C03b 23/02
U.S. Cl. 65—273 16 Claims



Apparatus for imparting a predetermined permanent curvature to sheet blanks of materials, such as glass, which are softenable by heating, which apparatus presents a preheating zone arranged along a first line, a cooling zone arranged along a second line parallel to the first line, a bending zone arranged adjacent at least one of the preheating and cooling zones, at least one tray provided for holding a sheet blank which is to be given predetermined permanent curvature, and means, including swivel wheels, projecting arms, and a track to engage with the arms, for permitting displacement of the tray in a predetermined direction one of the lines then through the bending zone, and the reverse direction along the other of the lines for exposing a blank held in the tray to successive treatments at the zones.

3,764,289
FALLING GOB DEVIATION INDICATOR
Andrew Ellsworth Brymer, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed May 30, 1972, Ser. No. 258,098
Int. Cl. C03b 5/38
U.S. Cl. 65—304 3 Claims



Apparatus and method for indicating the deviation of a severed gob of glass from travel in a vertical plane. A guide funnel is positioned in the path of travel of a freely falling, severed glass gob to guide it to a work station. Two switches are positioned in diametrically opposed locations on the funnel. The switches are normally open and each is connected to an indicator light. If the severed gob deviates from a true vertical path through the guide funnel, the gob will close one switch or the other, causing the light associated therewith to flash and thus alert an operator as to the deviation in path.

3,764,290
PROCESS FOR THE TREATMENT OF DECOMPOSABLE RAW MATERIAL
Eberhard Spohn, 6 Berliner Strasse, 69 Heidelberg, Germany
No Drawing. Filed Mar. 11, 1970, Ser. No. 18,711
Claims priority, application Germany, Apr. 4, 1969, P 19 17 239.5
Int. Cl. C05f 11/00
U.S. Cl. 71—9 10 Claims

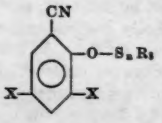
An improved process for the treatment of decomposable raw material such as refuse is described. In one embodiment, the raw material is preferably comminuted and subsequently completely kneaded to a crumbly state prior to a final composting operation. A carefully regulated decomposition or composting operation is carried out, either in windrows in conventional manner, or in containers preferably with a controlled amount of water added to air introduced preferably at the top of the piled stack of raw material. The air may be added continuously or by a regulated pulse cycle in amounts determined by the oxygen requirements of aerobic micro-organisms residing in the stack. In this manner a uniform decomposition temperature and maturing is effected in a shortened period of time without deleterious putrefaction.

3,764,291
METHOD OF CONTROLLING ALGAE WITH TRICHLOROACRYLONITRILE
Don R. Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Original application May 26, 1971, Ser. No. 147,195, now Patent No. 3,711,603. Divided and this application July 17, 1972, Ser. No. 272,278
Int. Cl. A01n 9/20
U.S. Cl. 71—67 1 Claim

This invention relates to a method of controlling bacteria and algae by applying an effective amount of trichloroacrylonitrile to the habitat thereof.

3,764,292
ORGANOTIN NITRILES AS SELECTIVE HERBICIDES
Adolph J. Deinet, East Brunswick, N.J., assignor to Tenneco Chemicals, Inc.
No Drawing. Application May 11, 1970, Ser. No. 36,381, now Patent No. 3,683,089, dated Aug. 8, 1972, which is a division of application Ser. No. 800,741, Feb. 19, 1969, now Patent No. 3,560,540, dated Feb. 2, 1971. Divided and this application July 27, 1972, Ser. No. 275,810
Int. Cl. A01n 9/24
U.S. Cl. 71—97 4 Claims

Organotin compounds that have the structural formula



wherein each R represents an alkyl group having from 4 to 8 carbon atoms or a phenyl group; one of the X substituents represents halogen; and the other X substituent represents hydrogen or halogen are effective as selective herbicides.

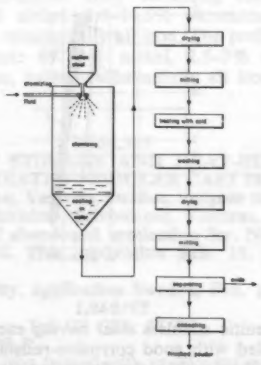
3,764,293
LIQUID DROPLET SPRAYING METHOD AND COMPOSITION
Durward O. Guth, 332 S. Center St., Hillside, Ill. 60162
No Drawing. Filed July 1, 1970, Ser. No. 51,658
Int. Cl. A01n *9/24*
U.S. Cl. 71—117 1 Claim

A new dispersing system for the production of liquid droplets of herbicides, fungicides or pesticides, having a particle diameter between 200 and 800 microns, preferably from 225 to 400 microns, the sole ingredient which creates the stable size of particle droplet being a polyhydric diol having from 2 to 6 carbon atoms.

3,764,294
METHOD FOR STIMULATING PLANT GROWTH
George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Original application Oct. 3, 1969, Ser. No. 863,687, now Patent No. 3,630,717, and a continuation-in-part of application Ser. No. 603,700, Dec. 1, 1966, now Patent No. 3,472,647. Divided and this application Oct. 28, 1970, Ser. No. 84,948
The portion of the term of the patent subsequent to Oct. 14, 1986, has been disclaimed
Int. Cl. A01n *9/24*
U.S. Cl. 71—122 8 Claims

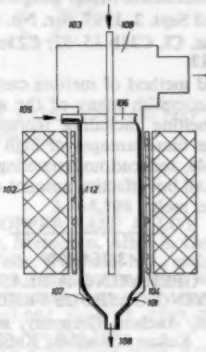
A method is described for stimulation of plant growth employing lower aliphatic alcohols of from 1 to 6 carbon atoms as the growth stimulating agent. The alcohol may also be used in an aqueous solution. Growth stimulation is also produced by employing an aqueous alcoholic solution in which soil, in which plants have growth, or plants have been placed and removed when the lower aliphatic alcohol is no longer present.

3,764,295
METHOD OF MANUFACTURING LOW-ALLOY STEEL POWDER HAVING A LOW CONTENT OF OXIDIC CONSTITUENTS
Per Folke Lindskog, Anders Eric Bengtsson, and Sven-Erik Grek, Hoganas, and Lennart Yngve Lagerholm, Kungalv, Sweden, assignors to Hoganas AG, Hoganas, Sweden
Filed May 3, 1972, Ser. No. 250,056
Claims priority, application Sweden, May 14, 1971, 6,285/71
Int. Cl. B29d *23/08*
U.S. Cl. 75—.5 BA 7 Claims



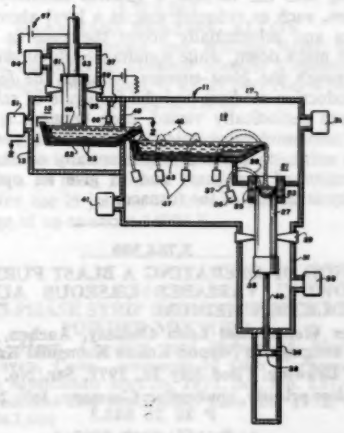
Molten steel is atomized in an oxidizing environment. The particles thus produced consist of a metallic core and an oxide skin. The particles are treated with an acid to remove the oxide skin, and are subsequently rinsed, dried and annealed to produce a substantially oxide-free steel power having ductile particles.

3,764,296
METHOD AND THE APPARATUS FOR CARRYING OUT METALLURGICAL AND CHEMICAL PROCESSES
Gottfried Gerlach, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 30, 1970, Ser. No. 23,665
Claims priority, application Germany, Apr. 5, 1969, P 19 17 599.6, P 19 17 743.6; Mar. 7, 1970, P 20 10 886.5
Int. Cl. C22b *21/00*; C22d *7/02*; H05b *5/00*
U.S. Cl. 75—10 5 Claims



A method and a device for carrying out chemical and metallurgical processes involving at least one electrically conductive medium in which the electrically conductive medium is liquid and wherein the liquid medium is under the influence of a rotating electrical field which causes its surface to be deformed and enlarged relative to when the field is inactive.

3,764,297
METHOD AND APPARATUS FOR PURIFYING METAL
Brian C. Coad, Oakland, and Raymond B. Palmer, Berkeley, Calif., assignors to Airco, Inc.
Filed Aug. 18, 1971, Ser. No. 172,647
Int. Cl. C21c *5/52*; C22d *7/00*; H05b *7/18*
U.S. Cl. 75—10 7 Claims



A method and apparatus are described for purifying metal. Solid metal is melted in a first vacuum region by means of an electric arc. The metal thus melted is col-

lected in skulled containing means and passed from the first vacuum region to and through a second vacuum region having a substantially lower pressure than the first vacuum region. The molten metal is heated in the second vacuum region by means of electron beams to purify the metal. The metal is then solidified in a third vacuum region.

3,764,298

METHOD OF MELTING CAST IRON

William H. Moore, Purchase, N.Y., assignor to Meehanite Metal Corporation

Filed Sept. 2, 1969, Ser. No. 854,606

Int. Cl. C21b *15/02*; C21c *5/52*

U.S. Cl. 75—12 **4 Claims**

An improved method of melting cast iron at high temperature to accomplish many of the advantages of high temperature melting including increased fluidity while overcoming the disadvantages of high temperature melting, for example, reduced undercooling, by the expedient of adding a small but effective amount of a silicon carbide to the cast iron melt.

3,764,299

PROCESS OF OPERATING A BLAST FURNACE BY VARYING GASEOUS FEED RATES

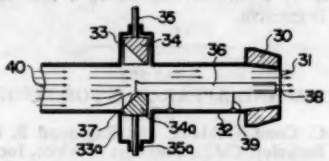
Werner Wenzel, Aachen, Germany, assignor to Nippon Kokan Kabushiki Kaisha

Filed May 26, 1971, Ser. No. 146,914

Claims priority, application Germany, June 20, 1970, P 20 30 468.1

Int. Cl. C21b *5/06*

U.S. Cl. 75—42 **12 Claims**



A method of operating a blast-furnace comprising blowing into the furnace a gaseous auxiliary reduction medium, such as reducing gas, at a level above the blast tuyeres and substantially above the zone in which the burden melts down, while simultaneously blowing in blast air through the blast tuyeres, wherein the feed rate of said reduction medium and the feed rate of said blast air are both periodically varied, each between a maximum and a minimum value, said feed rates being matched, one to the other, to provide a substantially constant rate of production of top gases and to give an optimum gas velocity at the top of the furnace.

3,764,300

METHOD OF OPERATING A BLAST FURNACE BY BLOWING VARIABLE GASEOUS AUXILIARY REDUCTION MEDIUM

Werner Wenzel and Leon Chaussy, Aachen, Germany, assignors to Nippon Kokan Kabushiki Kaisha

No Drawing. Filed July 21, 1971, Ser. No. 164,836

Claims priority, application Germany, July 25, 1970, P 20 26 845.3

Int. Cl. C21b *5/00*

U.S. Cl. 75—42 **6 Claims**

In operating a blast furnace, a gaseous auxiliary reduction medium is blown into the blast furnace at a level above the blast tuyeres and substantially above the zone in which the burden melts down and blast-air is also blown in through the tuyeres. Different quantity of gas and blast-air is supplied to adjacent blast nozzles for the reducing gas and those for the blast-air respectively, the gas supply to each nozzle for reducing gas and to each blast-air nozzle being alternated periodically between a maximum quantity and a minimum quantity. The superposed or subjacent blast nozzles for the reducing gas and blast-air are supplied in such manner that the blast cycles are reciprocal. The quantities of reducing gas and blast-air blown into the blast furnace through the nozzles are interrelated to provide that the total quantity of reducing gas blown into the blast furnace and that of blast-air remain substantially equal and correspond to an optimum flow of gas through the stack of the blast furnace.

3,764,301

OPERATION OF A BLAST FURNACE

Stephen William Kenneth Morgan, Avonmouth, England, assignor to Metallurgical Processes Limited, Nassau, Bahamas, and Imperial Smelting Corporation (N.S.C.) Limited, London, England

Filed Nov. 30, 1970, Ser. No. 93,664

Claims priority, application Great Britain, Dec. 3, 1969, 59,141/69

Int. Cl. B21k *1/02, 19/00*

U.S. Cl. 75—87 **16 Claims**

A zinc or zinc/lead blast furnace is operated by selecting as fuel lump carbonaceous material of reduced reactivity with carbon dioxide at 1000° C.

3,764,302

STAINLESS STEEL

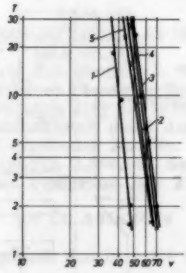
Lars Johan Bertil Troselius, Fagersta, and Claes Ulf Casimir Sparre and Roland Richard Kiessling, Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Nov. 1, 1971, Ser. No. 194,154

Claims priority, application Sweden, Nov. 12, 1970, 15,268/70

Int. Cl. C22c *39/20*

U.S. Cl. 75—125 **6 Claims**



An austenitic stainless steel having excellent machinability coupled with good corrosion-resistance has a composition falling within the following limits, in weights percentages:

	Percent
C	Up to 0.1
Cr	10–20
Ni	10–15
Mo	1–5

at least one member of the group consisting of

S, Pb, Se, Te	0.1–0.9

at least one member of the group consisting of

Ti, Zr	0.2–1.5
Cu	0–4
Si	Up to 1
Mn	Up to 2
Fe	(1)

[1] Balance save for normally present impurities.

3,764,303

Fe-Cr-Ni-Co-Mn-Mo WELDING MATERIAL AND BLANK WIRE AND BARE BAND ELECTRODE FORMS THEREOF

Gerhard Alfred Schmidt, 24 Mariazellerstrasse, Kapfenberg, Austria

No Drawing. Filed July 10, 1970, Ser. No. 53,997
Claims priority, application Austria, July 11, 1969, A 6,648/69
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 A 12 Claims

A composite welded article comprising a high-strength low-temperature steel, in particular a steel alloy containing about 9% nickel, which is welded by means of an arc-welding process with a Ni-Cr-Fe alloy consisting essentially of 0.2% C, 5–30% Cr, 5–30% Ni, 6–60% Co, traces to 12% Mn, traces to 0.65% Si, traces to 3.5% Mo and the remainder iron and the inevitable impurities.

3,764,304

CARBURIZATION AND OXIDATION RESISTANT ALLOY

Alvin E. Nehrenberg and Gene R. Rundell, Lockport, N.Y., assignors to Wallace-Murray Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 740,796, May 21, 1968, which is a continuation-in-part of application Ser. No. 488,321, Sept. 20, 1965, both now abandoned. This application Oct. 9, 1970, Ser. No. 79,645
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 C 2 Claims

Carburization and oxidation resistant, austenitic, iron-nickel-chromium-silicon alloy consisting essentially of about: 35–74% nickel, 2.5–11.5% chromium, 1–5.5% silicon, balance substantially all iron. The preferred composition is about: 69–71% nickel, 2.5–7% chromium, 2.5–4.5% silicon, balance substantially all iron.

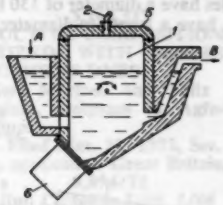
3,764,305

METHOD OF STORAGE AND HEAT-RETAINING FOR TREATED NODULAR CAST IRON

Georg Andersson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of abandoned application Ser. No. 703,175, Feb. 5, 1968. This application Feb. 25, 1971, Ser. No. 118,957
Claims priority, application Sweden, Feb. 10, 1967, 1,860/67
Int. Cl. C22c *37/00*
U.S. Cl. 75—130 R 2 Claims

Nodular cast iron treated with an alloying medium containing magnesium is poured into an inlet of a double-crossed induction furnace, the inlet and outlet channels of which are sealed by the melt, forming a closed space above the melt from which air is evacuated and into which protective gas is introduced at a pressure above atmospheric. The nodular cast iron is stored and kept hot in the furnace and is tapped off through the outlet. The overpressure above the melt is preferably maintained at 0.005 to 0.3 atomsphere. Calcium carbide may be added from time to time to form slag.



3,764,306

COPPER BASE ALLOY

Edward A. Blythe, Metuchen, Allan S. Gelb, Edison, and Donald L. La Velle, Westfield, N.J., assignors to American Smelting and Refining Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 667,094, Sept. 12, 1967. This application Apr. 7, 1969, Ser. No. 814,199
Int. Cl. C22c *9/04, 9/06, 9/08*
U.S. Cl. 75—157.5 3 Claims

This invention relates to new and improved copper base alloys characterized by considerably increased yield strengths combined with good ductility, and an attractive silvery appearance especially when polished, such alloy comprising the following constituents in the proportions specified:

	Percent by weight
Aluminum	1–1.5
Manganese	17–22
Zinc	17–22
Copper	58–60.5

A small amount of lead, which is sufficient to impart machinability to the alloy but is not in excess of about 7% by weight thereof, is incorporated in the alloy of this invention in another embodiment of the invention.

3,764,307

Ni-Au BASE BRAZING ALLOY

Raymond P. Barb, Saugus, and William Sutar, Boston, Mass., assignors to General Electric Company

No Drawing. Filed Aug. 4, 1972, Ser. No. 278,005
Int. Cl. C22c *19/00*
U.S. Cl. 75—170 3 Claims

A nickel-gold base brazing alloy with relatively low gold content derives its properties from a balance of Au, Si and B in a Ni base. It has a liquidus of less than about 1900° F. for use in joining members intended to operate in the range of up to about 1400° F.

3,764,308

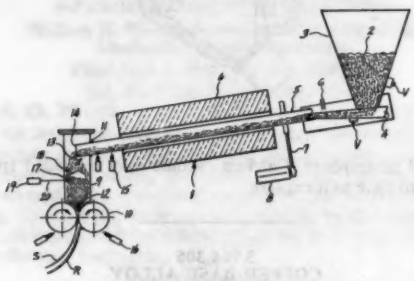
MULTI-PHASE STRIP FROM PARTICLE AND POWDER MIXTURE

Werner G. Horn, Cheshire, and Robert M. Neumann, New Haven, Conn., assignors to Olin Corporation

Original application Apr. 26, 1971, Ser. No. 137,489. Divided and this application June 16, 1972, Ser. No. 263,606
Int. Cl. B22f *1/00, 3/18*
U.S. Cl. 75—211 13 Claims

An article or strip formed by compacting coarse metal particles or a mixture of coarse metal particles and a fine

powder. The invention is particularly directed to the formation of multi-phase strip having a matrix formed of compacted coarse metal particles and at least one second phase formed of a compacted powder. The apparatus and process of forming the strip are also part of the invention. The particles have a diameter of 150 to 1200 microns and, preferably, have a length-to-diameter ratio of 3:1 to



10:1. The powder material has a diameter of less than 50 microns. Particle size and density segregation effects are minimized by adding powder to the particles at a point in close proximity to the compacting means. The invention is particularly applicable to copper and copper base alloys and is uniquely suited to produce anode matrix combinations in accordance with U.S. Pat. No. 3,574,081.

3,764,309

COLOR PRINTING METHOD

Yasuo Tamai, Masamichi Sato, and Satoru Honjo, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 2, 1968, Ser. No. 780,495
Claims priority, application Japan, Dec. 1, 1967, 42/77,139
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 R **10 Claims**

Color printing method comprising forming an electrostatic latent image on an insulating layer, converting the latent image into a material image utilizing a finely divided powder which comprises a material which easily absorbs a water-soluble dye from a solution thereof, fixing the material image and contacting the material image with a dye solution to absorb the dye into the material image. The absorbed dye is then transferred onto a dye-receiving sheet material.

3,764,310

METHOD OF PRODUCING ELECTROSTATOGRAPHIC DEVELOPER

Robert J. Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Original application Oct. 23, 1969, Ser. No. 868,903, now Patent No. 3,658,500. Divided and this application Feb. 11, 1972, Ser. No. 225,605
Int. Cl. G03g *9/02*; C03b *37/00*
U.S. Cl. 96—1 R **8 Claims**

Spherical glass beads are produced by isolating individual glass particles on a non-wetting ceramic block and heating the glass to a temperature at which the glass particles are drawn-up into spherical beads. The spherical beads, either coated or uncoated, may be employed as the carrier in an electrostatographic developer. The carriers are characterized by more uniform sizing and greater approximation to a spherical shape.

3,764,311

FROST IMAGING SYSTEM

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of abandoned application Ser. No. 576,648, Sept. 1, 1966. This application July 28, 1970, Ser. No. 58,806
Int. Cl. B41m *5/18, 5/20*; G03g *13/12*
U.S. Cl. 96—1.1 **69 Claims**

An imaging member comprising a support layer, a photoconductive layer overlying said support layer and a charge retaining surface deformable layer overlying said photoconductive layer is electrically charged, imagewise exposed and maintained in a softenable state whereby the surface layer deforms in a frost pattern. Single charge and optical screening methods and imaging members with optical screens are also disclosed.

3,764,312

ELECTROPHOTOGRAPHIC PROCESS

Satoru Honjo, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1971, Ser. No. 213,135
Claims priority, application Japan, Dec. 28, 1970, 46/120,543
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.2 **3 Claims**

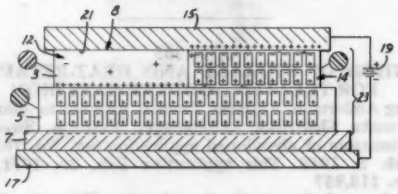
In a multi-image electrophotographic process, where plural photoconductive toner images are formed, applying a material to a toner image which renders the image conductive before the formation of the next photoconductive toner image. The material is non-adhesive to the toner. The initial toner image thus does not serve as an insulating layer for subsequent photoconductive toner. Particular application is formed with toner comprising a transparent insulating core with a surface photoconductive layer.

3,764,313

ELECTROGRAPHIC FIELD ELECTRODE

Benjamin L. Shely, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 663,818, Aug. 28, 1967, now Patent No. 3,563,134, which is a continuation-in-part of abandoned applications Ser. No. 403,737, Oct. 14, 1964, and Ser. No. 567,170, July 22, 1966. This application Apr. 29, 1969, Ser. No. 820,062
Int. Cl. G03g *5/02, 5/06, 5/08*
U.S. Cl. 96—1.5 **16 Claims**



A multilayered sheet construction for use in a dynamic electrographic process as the ultimate copy or as an intermediate for preparing copies, such sheet having an image layer capable of providing a differentially conductive image pattern which is developable by conductive particulate under a development voltage, a dielectric layer bonded to the image layer which is of a thickness and conductivity whereby charge flow through the conductive

regions of image layer is controlled to reduce powder deposition in background areas, and a conductive layer bonded to the dielectric layer.

3,764,314

ELECTROPHOTOGRAPHIC COMPOSITION OF A POLY-N-VINYLCARBAZOLE AND A DIMETHYLNAPHTHALENE

Tetsuo Tanaka, Akio Kojima, and Takamichi Enomoto, Tokyo, Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,629
Claims priority, application Japan, Apr. 19, 1971, 46/24,503
Int. Cl. G03g 5/06
U.S. Cl. 96—1.5 14 Claims

Films especially for use in electrophotography which comprise poly-N-vinylcarbazole, nuclear substituted derivatives thereof, and their mixtures together with at least one member selected from the group consisting of 1,2-dimethylnaphthalene, 1,4 - dimethylnaphthalene and 1,6-dimethylnaphthalene.

3,764,315

AMBIPOLAR ELECTROPHOTOGRAPHIC PLATE

Joseph Mort, Webster, James H. Sharp and Lloyd F. Bean, Rochester, and Inan Chen and Robert L. Emerald, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 24, 1972, Ser. No. 274,141
Int. Cl. G03g 5/08
U.S. Cl. 96—1.5 16 Claims

An ambipolar, electrophotographic plate is disclosed of improved cyclic and discharge characteristics, having a photosensitive binder layer which comprises cadmium sulfoselenide particles, ($Cd\text{-}S_x\text{-}Se_y$) dispersed in an ambipolar active matrix binder material in an amount of between about 10 to 15% by weight of said binder. The cadmium sulfoselenide has a stoichiometric relationship of sulfur to selenium, where x is between about 0.1 to 0.6 and y is between about 0.9 to 0.4, to provide a pigment of panchromatic response, and the ambipolar active matrix binder material comprises a mixture of between about 6 to 14% by weight of 2,4,7 trinitro-9-fluorenone in polyvinylcarbazole, to support the injection and transport of photoexcited holes and electrons from the dispersed photosensitive particles through the active matrix binder upon imagewise exposure to radiation without substantial generation of charge carriers itself.

3,764,316

ORGANIC PHOTOCONDUCTIVE MATERIAL COMPRISING POLY (VINYL-MONOIODO BENZOCARBAZOLE)

Earl E. Dailey, South Euclid, and Jerry M. Barton, Highland Heights, Ohio, Ralph L. Minnis, Des Plaines, Ill., and Evan S. Baltazzi, Northfield, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 29,271, Apr. 16, 1970. This application May 30, 1972, Ser. No. 257,962
Int. Cl. G03g 5/06
U.S. Cl. 96—1.6 24 Claims

An electrophotographic member having a rapid photoresponse in which the photoconductive layer is a monoiodo substituted (vinyl-benzocarbazole) polymerized through the vinyl radical and applied to a conductive support such as aluminized polyester film. Polymerization produces poly(vinyl-monoiododibenzo carbazole) such as poly(7-vinyl-10-iodo-7H-benzo[c]carbazole). The relative viscosity range of the useful photoconductive polymers is in the range of 1.3 to 5.0. The iodinated benzocarbazole polymers are applied to the base supports at a rate sufficient to produce a coating weight (dry basis) in the range of 0.1 gram to 2.0 grams per square foot on a dry coating thickness of .05 mil to 1.00 mil.

3,764,317

PHOTOCONDUCTIVE COMPOSITIONS SPECTRALLY SENSITIZED WITH N-SUBSTITUTED 2-AMINOTHIOPHENE DYES

Henri Depoorter, Mortsel, and Felix Jan Moelants, Wilrijk, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Mar. 22, 1972, Ser. No. 236,967
Claims priority, application Great Britain, Apr. 8, 1971, 9,094/71
Int. Cl. G03g 5/06, 5/08
U.S. Cl. 96—1.7 12 Claims

A recording material comprising a photoconductive substance is described wherein the said material comprises a spectrally sensitizing dye which comprises in its molecule at least one N-substituted 2-aminothiophene ring. The photoconductive substance may be an inorganic photoconductor or an organic photoconductor.

3,764,318

PROCESS FOR PRODUCING MULTICOLOUR PHOTOGRAPHIC IMAGES

Urbain Leopold Laridon, Wilrijk, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed June 1, 1971, Ser. No. 149,087
Claims priority, application Great Britain, June 2, 1970, 26,611/70
Int. Cl. G03c 7/00
U.S. Cl. 96—2 12 Claims

The invention describes a process for the manufacture of coloured halftone and line-work photographic images e.g. for colour proofing.

An element comprising a temporary support and a light-sensitive layer, wherein a colour pigment is dispersed in a photo-solubilizable binder material, is treated as follows:

(A) exposure to light through a colour separation transparency,
(B) dissolution of exposed portions,
(C) pressing the positive image formed on a receptor surface wetted with a solvent or swelling agent for the photosolubilizable binder material and separation of the temporary support,
(D) dissolution of transferred binder material whereby a positive pigment image remains on the receptor.

In the case a multicolour image is desired the different steps are repeated with other colour separation transparencies and other pigmented photosolubilizable layers on temporary supports, whereby in each step (C) the new positive image is transferred to the receptor surface in register with the pigment image already present.

When the temporary supports are transparent the different coloured positive images formed on them can also be combined into register so as to form an overlay colour image of the original.

3,764,319

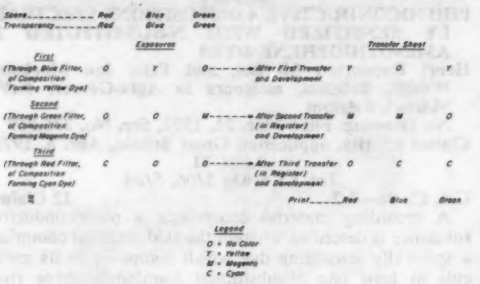
FREE RADICAL DIRECT POSITIVE PHOTOCOPY PROCESS

Juergen H. H. Keller and Robert H. Sprague, Chelmsford, Mass., assignors to Itek Corporation, Lexington, Mass.

Continuation-in-part of abandoned application Ser. No. 658,425, Aug. 4, 1967. This application Nov. 13, 1970, Ser. No. 89,535
Int. Cl. G03c 7/00
U.S. Cl. 96—3 15 Claims

A process for producing direct positive photocopies by exposure of a supported light-sensitive composition to imaging light to produce a negative image copy, transfer of unexposed portions of the composition to a transfer sheet, and exposure of the transfer sheet to light to pro-

duce the positive copy. The light-sensitive compositions, which produce color on exposure to light without further development, comprise a dye base such as styryl, cyanine



or merocyanine in combination with an activator compound such as carbon tetrabromide. Monochromatic and multi-layer full-color prints can be produced.

3,764,320

FREE-RADICAL DYE-TRANSFER PHOTOGRAPHIC PROCESS

Robert H. Sprague, Chelmsford, Mass., assignor to Itek Corporation, Lexington, Mass.

Continuation-in-part of abandoned application Ser. No. 658,424, Aug. 4, 1967. This application Nov. 13, 1970, Ser. No. 89,534

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 D **13 Claims**

A dye-transfer process for producing multi-layer full-color prints by separate exposure of three supported light-sensitive compositions to imaging light from a color negative through green, red, and blue filters respectively, to produce a magenta, cyan, and yellow dye image in the respective compositions. The images are each transferred, in register, to a transfer sheet in the presence of a transfer agent to give the color print. The light-sensitive compositions, which produce color on exposure without development, comprise a dye base such as styryl, cyanine or merocyanine in combination with an activator compound such as carbon tetrabromide.

3,764,321

PHOTOGRAPHIC DRY COPYING PROCESS WITH A NEUTROSTYRYL DYE

Helmut Kampfer and Hans Ohlschlager, Cologne, and Anita von Konig, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,927

Claims priority, application Germany, Aug. 28, 1970, P 20 42 663.5

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 D **34 Claims**

A process for the production of copies by imagewise exposure of a light sensitive layer which contains a sensitizer and an image producing compound which is transferable to an image receiving layer, the image producing compound in the exposed areas being converted into a non-transferable compound contacting the exposed layer with an image receiving layer which contains compounds which react with the image producing compound to form colored compounds, and heating of the layers which are in contact with each other to a temperature at which the image producing compound in the unexposed areas of the light sensitive layer is transferred to the image receiving layer. In the process is used a light sensitive layer which contains as light sensitive compounds, selected neutrostyryl dyes, as image producing transferable compound, a reducing agent which is transferable at a temperature of between 80° C. and 200° C. and which is converted into non-volatile reaction products when the material is exposed.

3,764,322

PHOTOGRAPHY DRY COPYING PROCESS WITH A MEROCYANINE DYE

Helmut Kampfer, Cologne, Johannes Gotze, Berg, Anita von Konig, Leverkusen, and Hans Ohlschlager, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,929

Claims priority, application Germany, Aug. 27, 1970, P 20 42 531.4

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 D **32 Claims**

Certain merocyanine dyes make improved sensitizers for light-sensitive photographic layers containing the sensitizer and an image-producing compound capable of transfer at 80–200° C. to an image-receiving layer in contact with the photographic layer, but rendered non-transferable where exposed to light.

3,764,323

METHOD OF FORMING LITHOGRAPHIC PRINTING PLATE

Joseph G. Strem, Chicago, John S. Juskey, Rolling Meadows, and Elias P. Moschovis, Chicago, Ill., assignors to APECO Corporation, Evanston, Ill.

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,399

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **8 Claims**

Lithographic printing plates are prepared from imaged silver halide photographic elements by contacting the element with a benzotriazole substituted in the 4, 5, 6, and/or 7 positions. Portions of the element containing silver halide are rendered oleophilic and thus receptive to oily printing inks, while portions free of halide are unreactive and thus oleophobic.

3,764,324

PHOTOGRAPHIC POLYMER COMPOSITION AND PROCESS FOR CROSSLINKING

Zoila Reyes, Menlo Park, Calif., assignor to McCall Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 886,767, Dec. 19, 1969. This application Apr. 13, 1972, Ser. No. 243,845

Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 **26 Claims**

A relief image element useful as a printing plate is prepared by the selective exposure of a mixture comprising an unsaturated elastopolymeric composition, a saturated halogenated polymer and a crosslinking agent to UV light or high energy radiation in the presence of a photoinitiator. The resulting product is a relatively hard, resilient three dimensional polymer system which is resistant to printing ink solvents.

3,764,325

METHOD FOR MAKING ELECTRICAL MONOGRAIN LAYER

Ties Siebolt te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 1, 1966, Ser. No. 569,170

Claims priority, application Netherlands, Aug. 4, 1965, 6510096

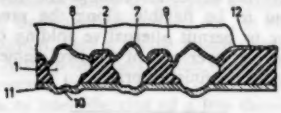
The portion of the term of the patent subsequent to Oct. 9, 1988, has been disclaimed

Int. Cl. G03c *5/00, 11/00*

U.S. Cl. 96—38.4 **11 Claims**

A method of making an electrical monograin layer device in which the layer of grains, usually of semicon-

ductive material, are embedded in a photoresist layer, which is then exposed through the grains and developed. The photoresist portions shadowed by the grains remain unexposed and are removed by the developer, whereas



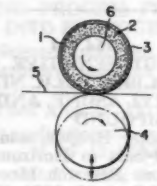
the resist portions extending between the grains and exposed become hardened and bind the grains together. The exposed grain surface portions are then contacted with an electrode.

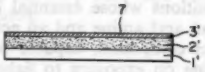
3,764,326

METHOD OF DEVELOPING TWO COMPONENT DIAZO TYPE COPYING MATERIAL

Shigeaki Yoshida and Takeshi Matsui, Tokyo, Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed Apr. 5, 1972, Ser. No. 241,324
Int. Cl. G03c *5/18, 5/34*
U.S. Cl. 96—49 **10 Claims**





A method for developing a two component diazo type copying material carrying a latent image, which comprises exposing the latent image to amine vapors generated by heating finely divided, porous, substantially dry adsorbent particles having adsorbed amine thereon, and diazo developing composite product useful for such method.

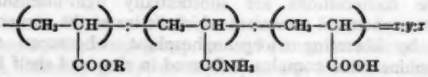
3,764,327

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tadashi Nagae and Nobuo Tsuji, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Dec. 22, 1971, Ser. No. 211,101
Claims priority, application Japan, Dec. 26, 1970, 45/118,983
Int. Cl. G03c *5/30, 5/50, 7/00*
U.S. Cl. 96—55 **11 Claims**

The color density of photographic light-sensitive elements is increased by incorporating in an emulsion layer a polymer of constituents represented by the following formulae:



wherein R represents an alkyl group preferably having 1 to 4 carbon atoms and x, y, and z are numbers satisfying the following conditions:

$$40 \leqq x \leqq 90$$
$$10 \leqq y \leqq 60$$
$$0 \leqq z \leqq 40$$
$$x+y+z=100$$

3,764,328

PHOTOTHERMIC SILVER HALIDE ELEMENT CONTAINING AN ORGANIC MERCURIC SOAP AND A COLOR-FORMING COUPLER

Stephen P. Birkeland, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,084
Int. Cl. G03c *1/04, 1/52, 1/76*
U.S. Cl. 96—67 **11 Claims**

Light-sensitive heat developable sheet materials containing organic silver salt and photosensitive silver halide and capable on exposure and development of forming clear, bright and intense color images contain between .5 and .9 equivalent of mercury and up to 11 mols of color coupler per mol of silver and are developed by heating in presence of a p-phenylenediamine reducing agent for silver ion.

3,764,329

HEAT-ACTIVATED DRY SILVER

James T. Lee, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,579
Int. Cl. G03c *1/60, 1/72*
U.S. Cl. 96—67 **7 Claims**

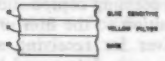
Light-stable sheet materials which darken only under relatively severe heating and are rendered light-sensitive and rapidly heat-developable by moderate heating contain an imaging composition containing an organic silver soap and a hindered phenol reducing agent together with a small amount of a reducible halogen compound having the essential structure —CONX— or —SO_2NX— wherein X is chlorine or bromine.

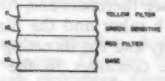
3,764,330

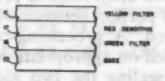
COLOR PHOTOGRAPHIC LIGHT SENSITIVE ELEMENTS

Willard E. Vary, 4734 Bromley Ave., Bradbury Park, Md. 20023

Filed May 25, 1970, Ser. No. 40,015
Int. Cl. G03c *1/76, 1/84, 7/00*
U.S. Cl. 96—69 **8 Claims**





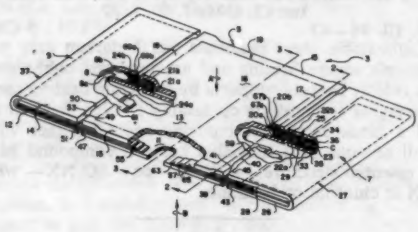


A color photographic light sensitive element having one or two color emulsion layers each layer being sensitized to only one of the red, green, or blue primary colors.

3,764,331
COLOR PHOTOGRAPHIC MATERIAL
Yasushi Ohyama, Takatsuki, and Sadayuki Miyazawa, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan
No Drawing. Filed Oct. 23, 1970, Ser. No. 83,676
Int. Cl. G03c *1/40*
U.S. Cl. 96—73 **1 Claim**

Color photographic material utilizing the silver-dye-bleach process which has high camera- or printing-speed together with high fastness to light and moisture and excellent sharpness peculiar to the silver-dye-bleach process and which comprises at least two sets of a combination of superposed multilayers said combination consisting of (a) a prefogged low-speed chloride-rich silver halide emulsion layer containing bleachable dyes, (b) a color-sensitized or non-sensitized high speed bromide-rich silver halide emulsion layer, and (c) an interlayer or overlayer superposed on top of them, the color of the dyes incorporated in the prefogged low-speed emulsion layer properly matching the color sensitivity of the high-speed emulsion.

3,764,332
INTEGRAL FILM UNIT ASSEMBLY
Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 7, 1971, Ser. No. 178,137
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **7 Claims**



A film assembly of the self-processing type has certain of its component parts adapted to be separated by a severing device. The film assembly comprises a preregistered integral film unit including a photosensitive element and a superposed process element having image portions that are separable to admit a processing composition therebetween, a processing composition container for supplying the composition to the film unit, and a processing composition receiver for receiving any excess composition from the film unit. Interposed between and extending beyond the photosensitive and process elements is a masking member for defining the image portions and a predetermined space therebetween, for connecting the two elements with each other and the film unit with the container and receiver, and for directing the processing composition from the container to the image portions and the excess composition from said portions to the receiver. The receiver may be defined by one end of the masking member folded back upon itself to provide a main portion and a back-folded portion between which the excess composition is received. A processing-composition-activated adhesive is provided on appropriate surfaces of the masking member for sealing the two elements together and the receiver closed after the processing composition has been directed from the container to the image portions and the excess composition has been directed to the receiver. To facilitate separation of the film unit from the container and receiver, means are provided for guiding a severing device along predetermined paths between the film unit and container and between the film unit and receiver, the guiding means including opposing guide surfaces defining elongate slots extending across the masking member for defining the predetermined paths and for guiding the severing device therealong. The masking member is adapted to be flexible along the predetermined paths in order to permit alternative folding of the container and receiver over one of the two elements to provide a backing for the finished print.

3,764,333
THERMOGRAPHIC COPY SHEET CONTAINING 2-PHENYL 1,3-INDANEDIONE
Albert W. Leclair, Hudson, and Charles H. Benbrook, Nashua, N.H., assignors to Nashua Corporation, Nashua, N.H.
No Drawing. Continuation of abandoned application Ser. No. 25,259, Apr. 2, 1970. This application May 15, 1972, Ser. No. 253,660
Int. Cl. G03c *1/00*
U.S. Cl. 96—88 **1 Claim**

A thermographic copy sheet capable of being rendered thermographically inactive upon exposure to short wave length radiation is formed from 2-phenyl 1,3-indanedione and a material reactive with it to form a color, such as a silver salt. A dye sensitizer may be included to shift the spectral response.

3,764,334
NON-SILVER PHOTOSENSITIVE COMPOSITION CONTAINING A BIS-CYCLIC NITROGEN COMPOUND, AN ARYL AMINE, AND AN ORGANIC HALOGEN COMPOUND
Eugene Wainer, Shaker Heights, and James F. Betts, Euclid, Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated
No Drawing. Filed Sept. 22, 1971, Ser. No. 182,918
Int. Cl. G03c *1/52*
U.S. Cl. 96—90 R **6 Claims**

The sensitometric properties of dry, non-silver photographic compositions whose essential ingredients consist principally of an aryl amine and an activator, such as an organic halogen compound, capable of producing color from such amine on exposure to light, are found to be modified by the addition of minor amounts of bis-nitrogen cyclic compounds. The use of these compounds in a preferred range yields a substantial increase in contrast, gamma, and, in some cases, photographic speed over that exhibited by identical formulations in the absence of such compounds.

3,764,335
IMAGE-FORMING COMPOSITIONS INCLUDING AN AZIDE AND TRANSITION METAL COMPLEXES OF TRIORGANOPHOSPHINES
Norvell J. Nelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Aug. 2, 1971, Ser. No. 168,393
Int. Cl. G03c *1/52, 1/58, 1/72*
U.S. Cl. 96—91 D **10 Claims**

Photographic image-forming compositions that include (1) an organoazide such as an aryl azide and (2) a labile phosphine complex that, on chemical treatment, can liberate a triorganophosphine, e.g. a triarylphosphine, which can form a radiation-sensitive complex with the azide, can be activated by chemical treatment and thereafter imagewise exposed to activating rays to yield a species that can react with a dye-forming coupler to form an image-dye. These compositions are substantially light-insensitive prior to chemical treatment which activates the composition by liberating triorganophosphine, whereupon the phosphine-azide complex is formed in situ, and shelf life

is desirably extended. When these compositions are carried on a support, image-forming elements are presented. Once the azide-phosphine complex is present in an activated composition, imagewise exposure to activating rays and subsequent or concomitant treatment with a dye-forming coupler or the like produces a negative image (i.e., one corresponding to exposed regions). If a leuco compound, dye forming coupler, etc., is also included in the composition, then a visible image generally forms on exposure. After production of the image, it can be stabilized by overall heating. In certain cases, heat fixation also produces intensification of a low density or substantially latent image. If desired, positive images can be formed by thermophotographic means. Once the phosphine-azide complex is formed, imagewise exposure to heat densitizes the complex in heated regions and a subsequent overall exposure to activating rays produces either a visible or an intensifiable photographic image. No heat fixation is required, but image intensification by heat may be accomplished if desired. Multi-color images can be prepared when an included coupler is of the type that will react with the azide when suitably exposed. Lithographic printing surfaces can be prepared when a hydrophilic, polymeric azide is used to form the complex or when hydrophilic polymeric couplers are used to form the image dye.

3,764,336

INCORPORATING PROCESS FOR INTRODUCING ADDITIVES INTO PHOTOGRAPHIC LAYERS

Fritz Nittel, Cologne-Stammheim, and Karl Lohmer, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,971

Claims priority, application Germany, Aug. 28, 1970, P 20 42 659.9

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **4 Claims**

Improved oil formers for incorporating additives into photographic layers containing gelatin as binder, are aliphatic substituted succinic acid half amides, the amide also being substituted.

3,764,337

COLOR PHOTOGRAPHIC MATERIALS CONTAINING DIHYDROXYSPIROCHROMAN COMPOUNDS AS STABILIZERS

Atsuaki Arai, Minoru Yamada, and Yasushi Oishi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

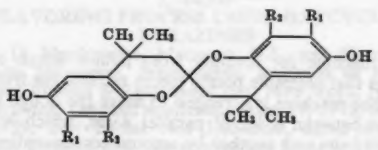
Filed Dec. 29, 1971, Ser. No. 213,540

Claims priority, application Japan, Dec. 29, 1970, 46/121,454; May 20, 1971, 46/34,621

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **7 Claims**

Color photographic materials containing as stabilizers compounds represented by the Formula I



wherein R_1 is an alkyl group having 18 or less carbon atoms, an alkenyl group, an aryl group, an alkoxy group, an alkenoxy group, an aryloxy group, an acylaminoalkyl group or an acylaminoaralkyl group, and R_2 is a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group or an alkoxy group.

3,764,338

SPECTRAL SENSITIZATION OF DIRECT-POSITIVE SILVER-HALIDE EMULSIONS

Henri Depoorter, Mortsel, and Felix Jan Moelants, Wilrijk, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Mar. 22, 1972, Ser. No. 237,002

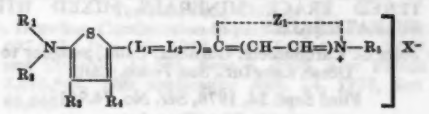
Claims priority, application Great Britain, Apr. 8, 1971, 9,095/71

Int. Cl. G03c *1/10, 1/36*

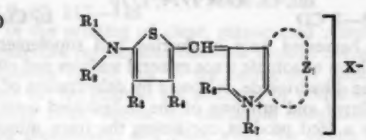
U.S. Cl. 96—101 **10 Claims**

A direct-positive silver halide emulsion comprising fogged silver halide is described wherein said emulsion is spectrally sensitized by means of a dye corresponding to one of the formulae:

(I)



(II)



wherein:

each of R_1 and R_2 represents C_1–C_5 alkyl or together represent the atoms necessary to complete a morpholine, piperidine, or pyrrolidine ring,

each of R_3 and R_4 represents hydrogen, an alkyl group or an aryl group,

each of L_1 and L_2 represents a methine group,

n represents 0 or 1,

m represents 1 or 2,

each of R_5 and R_7 represents a saturated or unsaturated aliphatic group or an aromatic group,

R_6 represents an aryl group, or a heterocyclic aromatic group,

Z_1 stands for the non-metallic atoms necessary to complete a 5- or 6-membered heterocyclic nucleus containing nitrogen, which nucleus may carry a fused-on benzene or naphthalene ring,

Z_2 represents the atoms necessary to complete a fused-on benzene ring, and

X stands for an anion but is not present when L_1, L_2, R_5, or R_7 contains an anionic group.

3,764,339

SILVER HALIDE EMULSIONS STABILIZED WITH N-(1,3,4 - THIADIAZOL-2-YL)-DITHIOCARBAMIC ACID ESTERS

Wolfgang Himmelmann, Opladen, Anita von König and Franz Moll, Leverkusen, Dietrich Rücker, Bietigheim, and Wilhelm Saleck, Schildgen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 8, 1971, Ser. No. 178,845

Claims priority, application Germany, Sept. 9, 1970, P 20 44 622.4

Int. Cl. G03c *1/34*

U.S. Cl. 96—109 **4 Claims**

The stability of photographic silver halide emulsions against spontaneous fog formation is improved by addition of an N-(1,3,4-thiadiazol-2-yl)-dithiocarbamic acid ester.

3,764,340

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Keisuke Shiba, Haruo Takei, Akira Sato, and Tadashi Ikeda, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 24, 1971, Ser. No. 183,592

Claims priority, application Japan, Sept. 24, 1970, 45/83,656

Int. Cl. G03c *1/14*

U.S. Cl. 96—124 6 Claims

A spectrally sensitized silver halide photographic emulsion, and more particularly a silver halide photographic emulsion supersensitized by the combined use of at least two sensitizing dyes resulting in a high red sensitivity.

3,764,341

KELP DERIVED FEEDS CONTAINING SEQUESTERED TRACE MINERALS MIXED WITH SULFATE SALTS

John G. Carbonniere, Gardena, Calif., assignor to Ocean Labs Inc., San Pedro, Calif.

Filed Sept. 24, 1970, Ser. No. 74,961

Int. Cl. A23k *1/14, 1/16*

U.S. Cl. 99—2 CD 16 Claims

Freshly harvested kelp is slurried and supplemented by the addition of soluble trace mineral sulfates and ethylene diamine dihydriodide, followed by dehydration of the resulting slurry and grinding of the dehydrated material to produce a feed product containing the trace minerals in sequestered and stabilized condition.

3,764,342

PRESERVATION OF BEER

Frede B. Strandskov, North Caldwell, N.J., and Henry L. Ziliotto, Wantagh, Long Island, N.Y., assignors to The F. & M. Schaefer Brewing Co., Brooklyn, N.Y.

No Drawing. Filed Jan. 17, 1969, Ser. No. 792,166

Int. Cl. C12h *1/00*

U.S. Cl. 426—151 5 Claims

Undesirable microbial growth in foodstuffs and beverages and in particular in finished beer is prevented by the utilization, as an additive to the foodstuff or beverage of a mixture of (a) the heptyl or octyl ester of parahydroxybenzoic acid or an alkali metal or alkaline earth metal salt thereof and (b) octyl gallate or an alkali metal or alkaline earth metal salt thereof.

3,764,343

CONTINUOUS COOKING METHOD

George W. Paugh, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Filed Oct. 12, 1971, Ser. No. 188,383

Int. Cl. A23l *1/10*

U.S. Cl. 426—352 6 Claims

Method of continuously cooking food or raw grain materials by metering the materials to a conveyor having a plurality of conveying members thereon and a pair of restriction members to establish fluid pressure seals with the conveying members. The materials are then conveyed through one of the restriction members and discharged into a cooker which for grain operates at a temperature of about 240°–300° F. and in a pressure range of about 10–50 p.s.i.g. while the moisture is maintained in the range of 25–40%. The materials are then received in compartments formed by the conveying members, passed through the second restriction member and discharged from the conveyor in a cooked condition without loss of pressure in the cooker.

3,764,344

DOUGH COMPOSITION FOR A CUP-SHAPED SHELL

Elmer F. Glabe, Chicago, Perry W. Anderson, Niles, and Stergios Laftsidis, Chicago, Ill., assignors to Food Technology, Inc., Chicago, Ill.

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,861

Int. Cl. A23l *1/10, 1/12, 1/16*

U.S. Cl. 426—138 3 Claims

A synergistic combination of durum wheat semolina or durum wheat semolina and potato peel flour, dehydrated mashed potato granules, potato starch and glycerin is mixed with water, the proportions of said ingredients being such as to produce an extrudable dough which will hold its shape. The dough is formed into a cup-shaped shell and water removed therefrom, e.g., by heating or baking. The cavity of said shell is then filled with mashed potatoes and the entire product is further heated or baked, thereby producing a simulated stuffed baked potato. Salt, milk, cheese, sour cream and other condiments can be added.

3,764,345

METHOD FOR FORMING FRENCH-FRY-CUT POTATO PIECES

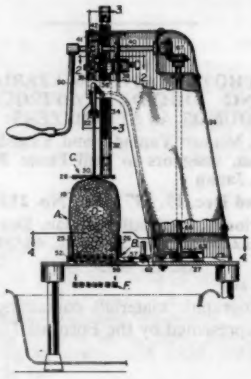
Roderick G. Beck, James F. Harmon, and Mounir A. Shatila, Blackfoot, Idaho, David A. Richins, Bountiful, Utah, and John H. Lach, Blackfoot, Idaho, assignors to American Potato Company, San Francisco, Calif.

Original application Apr. 16, 1969, Ser. No. 816,675.

Divided and this application Sept. 4, 1970, Ser. No. 78,324

Int. Cl. A23l *1/12*

U.S. Cl. 426—506 15 Claims



A machine for forming from potato dough elongate bodies that resemble potato pieces suitable for french frying. The machine is arranged to move the dough through spaces between a set of parallel wires, which wires are spaced from one another by amount corresponding to the width of the piece. The length of the spaces determines the length of the potato piece. A second set of parallel wires is supported in registry with the first mentioned set during dough movement; after the dough is moved by an amount corresponding to the thickness of a french fry

body, the wires of the second set are moved across the dough to separate potato pieces suitable for french frying. A machine for automatically synchronizing the movement of the dough, and the movement of the second set of wires. A french fry potato piece formed by the apparatus which piece is characterized by an uncompressed surface.

3,764,346

SPRAY DRIED ESSENTIAL OIL COMPOSITION

Peter P. Noznick, Evanston, and Charles W. Tatter, Homewood, Ill., assignors to Beatrice Foods Co., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 344,825, Feb. 14, 1964, and a division of application Ser. No. 719,766, Apr. 8, 1968, now Patent No. 3,628,968. This application Nov. 4, 1969, Ser. No. 874,075

Int. Cl. A23l *1/26*

U.S. Cl. 426—213 5 Claims

A spray dried mixture is prepared from (1) a polyglycerol partial ester of a higher fatty acid, (2) water soluble starch, modified starch, dextrin, sucrose, glucose, maltose, lactose, gum arabic, larch gum or corn syrup solids having a D.E. value of at least 4, and (3) an essential oil.

3,764,347

NO-CHOLESTEROL MAYONNAISE-TYPE SALAD DRESSING

Joseph J. Katz, Baltimore, Md., assignor to United Food Industries, Inc., Baltimore, Md.

No Drawing. Filed May 12, 1971, Ser. No. 142,759

Int. Cl. A23l *1/24*

U.S. Cl. 426—196 9 Claims

A no-cholesterol salad dressing of the mayonnaise type having good storage capabilities containing by weight 20–60 parts starch, 1–12 parts egg white and 30–70 parts vegetable oil. An emulsifier and a chelating agent are optional ingredients.

3,764,348

PRESERVATION OF PEACHES FOR SUBSEQUENT PROCESSING

Charles C. Huxsoll and James D. Ponting, El Cerrito, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 17, 1972, Ser. No. 235,820

Int. Cl. A23b *7/10;* A23l *3/34*

U.S. Cl. 426—310 2 Claims

Technique for preserving peaches in a fresh state pending their final processing as by canning, freezing, or the like. Example: Fresh peaches are halved and pitted, dipped in an aqueous solution of calcium chloride and ascorbic acid, and then stored in a dilute aqueous solution of citric acid or lactic acid or mixtures thereof. When circumstances warrant, the peaches are withdrawn from the solution in which they are being stored, and further processed in conventional manner.

3,764,349

FLAVORING PROCESS USING OXYCYCLIC PYRAZINES

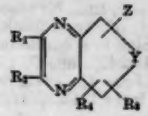
Braja D. Mookherjee, Matawan, N.J., and Muus G. J. Beets, Hilversum, Netherlands, assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Original application Apr. 17, 1970, Ser. No. 29,639, now Patent No. 3,684,809, dated Aug. 15, 1972. Divided and this application Sept. 9, 1971, Ser. No. 179,163

Int. Cl. A23l *1/26;* C07d *51/76*

U.S. Cl. 426—65 5 Claims

Processes for altering the flavors of products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one oxycyclic pyrazine having the formula



wherein Y is —CH_2— or —CH_2—CH_2—; Z is a carbonyl oxygen, a hydroxyl group, or an acyloxy group; and R_1, R_2, R_3, and R_4 are the same or different and represent hydrogen, alkyl, or alkylene; the products so produced; flavoring and flavor-enhancing compositions containing such oxycyclic pyrazines; and novel oxycyclic pyrazines and processes for their production.

3,764,350

PRINTING ON CELLULOSE FILMS

Harold R. Coleman, Danville, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 697,592, Jan. 15, 1968, now Patent No. 3,539,361, and Ser. No. 44,556, June 8, 1970, now Patent No. 3,695,904. This application Aug. 24, 1970, Ser. No. 66,645

Int. Cl. A22c *13/00*

U.S. Cl. 117—145 5 Claims

In the printing of clear, regenerated cellulose or fiber-reinforced regenerated cellulose sausage casings, improved adhesion of the ink to the casing and improved drying time for the imprint are obtained by preparing a cellulose casing from viscose by extrusion, coagulation, washing, and plasticizing, and then, while the casing is in the gel state and prior to drying thereof, applying to the gel casing in the area to be imprinted with printing ink a primer coating of an epoxy-substituted resin consisting of a water-soluble, thermosetting reaction product of an epihalohydrin and a poly secondary amine, said epoxy-substituted resin having an epoxy equivalent weight of at least about 100, thereafter drying the primed casing, and then imprinting the primer coated area of the dried casing with an oil-based ink or a flexographic ink.

3,764,351

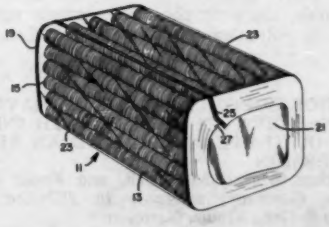
SHRINK WRAP SHIRRED CASING PACKAGE

Ray Jewel Whittington, Palos Park, and Boris Frank Resman, Downers Grove, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 21, 1971, Ser. No. 154,721

Int. Cl. A22c *13/00;* B65d *85/08*

U.S. Cl. 206—46 F 14 Claims



Package comprising a multiplicity of shirred sausage casings in stacked parallel relationship, end panel members abutting the ends of the casings, and a film of resilient shrinkable material shrink fitted to the outermost surfaces of the stacked casings, to the edge portions of the panel members and to a portion less than the whole of the outer surface of the end panel members.

3,764,352

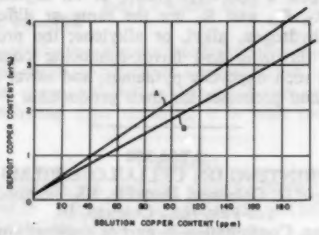
METAL FINISHING ALLOY

Michael Gulla, Newton, Mass., assignor to Shipley Company, Inc., Newton, Mass.

Continuation-in-part of application Ser. No. 119,661, Mar. 1, 1971, which is a continuation-in-part of application Ser. No. 43,242, June 3, 1970, now abandoned. This application June 13, 1972, Ser. No. 262,184

Int. Cl. C23c 3/02

U.S. Cl. 106—1 24 Claims



This invention relates to a new metal coating useful as a protective and decorative finish which finish also has unusual functional properties and to a metal plating solution capable of depositing said coating. The coating is an electroless nickel copper-phosphorus alloy substantially free of co-deposited sulfur which coating is deposited from an electroless nickel solution characterized by the presence of a small amount of copper ions. The copper ions provide an extremely smooth deposit resulting in a lustrous surface appearance. Moreover, copper ions in the monovalent cuprous state, added to the electroless nickel solution, provide the secondary advantages of stabilizing the plating solution and substantially improving corrosion resistance of the deposit. Copper ions in either the monovalent cuprous state or the divalent cupric state added to the electroless nickel solution co-deposit with the nickel providing the electroless alloy deposit of nickel, phosphorus and copper.

3,764,353

TREATING LIQUID FOR ELECTROPHOTOGRAPHIC OFFSET MASTER

Sakae Shimizu, Flushing, N.Y., and Rentaro Shimizu, Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

No Drawing. Filed June 1, 1970, Ser. No. 42,448

Claims priority, application Japan, June 2, 1969, 44/42,475

Int. Cl. C09d 5/00; C23c 3/00, 5/00

U.S. Cl. 106—2 8 Claims

A treating liquid to be employed for an electrophotographic offset master, which comprises ferrocyanide or ferricyanide, inorganic phosphate, organic acid or inorganic acid, polyvalent metallic salt and chelating agent.

3,764,354

FLUORIDE BOROSILICATE GLASS HAVING LOW REFRACTION, AN OPTICAL PATH INDEPENDENT OF TEMPERATURE, AND AN ELEVATED DISPERSION

Willi Ritze, Mainz, Mombach, and Franz Reitmayer, Drais, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany

No Drawing. Continuation of abandoned application Ser. No. 820,007, Apr. 28, 1969. This application July 19, 1972, Ser. No. 273,087

Claims priority, application Germany, May 4, 1968, P 17 71 312.1

Int. Cl. C03c 3/08, 3/10, 3/30

U.S. Cl. 106—54 19 Claims

Fluoride borosilicate glass characterized by a low index of refraction, an optical path independent of temperature and an elevated dispersion consisting essentially of, in weight percent:

SiO_2	14–63
B_2O_3	6–20
Al_2O_3	5–18
Alkali oxide plus alkali fluoride	8–20
Sb_2O_3	1.5–32
Plus additional fluorine, as fluorides, calculated as elemental fluorine	1–12

3,764,355

STABILIZATION OF POSITIVE SOL-REFRACTORY GRAIN SLURRIES

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 20, 1971, Ser. No. 145,534

Int. Cl. C04b 35/48

U.S. Cl. 106—57 11 Claims

Slurries of refractory material such as molochite suspended in aqueous sols of positively charged alumina coated colloidal silica particles are stabilized by the addition of certain acids, particularly hydroxy substituted organic acids such as hydroxyacetic acid.

3,764,356

HYDRATED ALKALI METAL SILICATE GLASS PARTICLES WITH SEQUESTERING AGENTS

Robert H. Sams, Aldan, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,577

Int. Cl. C09d 1/04; C11d 3/08

U.S. Cl. 106—74 12 Claims

Alakli metal silicate glass particles are hydrated with solutions of organic sequestering agents to produce a hydrated, readily soluble composite.

3,764,357

METHOD OF PREPARING LIGHTWEIGHT CONCRETE AND PLASTER AND THE LIGHTWEIGHT CONCRETE AND PLASTER THUS PREPARED

Andrew D. Bowles and Samuel J. Parsons, both of Box 2405, Anchorage, Alaska 99501

Filed Mar. 30, 1970, Ser. No. 24,022

Int. Cl. B28b 1/50, 21/04; C04b 21/08

U.S. Cl. 106—90 34 Claims

Lightweight concrete and plaster are prepared by a novel method which assures that the aggregate is uniformly admixed with the cementitious material and other relatively heavy ingredients of the concrete and plaster mixes. This is accomplished by wetting the surfaces of the lightweight aggregate particles with an aqueous medium, admixing the wet aggregate particles with dry finely divided cementitious material to form a coating thereon, and thereafter adding additional aqueous medium in an amount to produce a coherent formable uncured concrete or plaster matrix. The uncured concrete or plaster matrix may be formed into a desired configuration, and then is allowed to set in the usual manner. The addition of hydrated lime improves the cohesive properties of an uncured concrete matrix. Increased strength in cured lightweight concrete may be obtained by admixing pozzolan, hydrated lime and/or finely divided inert inorganic fillers such as sand with the uncured concrete matrix. A lightweight aggregate including expanded polystyrene beads is preferred, and further increased strength may be obtained by using polystyrene beads expanded in hot water.

3,764,358

SPERM OIL SUBSTITUTE AND ITS USE IN LEATHER TREATMENT

John G. Papalos, Kearny, and Clinton E. Retzsch, Caldwell, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,278

Int. Cl. C08h 9/00, 17/26
U.S. Cl. 106—249 8 Claims

A substitute for sperm oil is prepared consisting of a blend of esters with unsaturated oils. This blend may then be sulfated. The sulfated blend has utility in leather treatment.

3,764,359

CATIONIC AQUEOUS BITUMINOUS-AGGREGATE SLURRIES

Jack N. Dybalski, Chicago, Ill., assignor to Akzona Incorporated, Asheville, N.C.

No Drawing. Continuation-in-part of application Ser. No. 552,430, May 24, 1966, which is a continuation-in-part of application Ser. No. 346,113, Feb. 20, 1964, which in turn is a continuation-in-part of application Ser. No. 234,858, Nov. 1, 1962, all now abandoned. This application May 21, 1968, Ser. No. 730,906

Int. Cl. C08h 13/00; C08j 1/46; C09d 3/24
U.S. Cl. 106—280 1 Claim

Cationic aqueous bituminous emulsions of the oil in water type-aggregate slurries capable of being worked, containing a mono-quaternary and/or di-quaternary ammonium emulsifier for the bitumen. Such slurry compositions of light color may be pigmented. The slurry compositions are useful as coatings for roads, driveways, parking lots, playgrounds, tennis courts, runways, levees and holding pits.

3,764,360

PROCESS FOR PREPARING PHTHALOCYANINE PIGMENTS

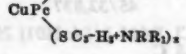
Robert Langley, Newton Mearns, Scotland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 19, 1971, Ser. No. 107,826

Claims priority, application Great Britain, Jan. 23, 1970, 3,330/70

Int. Cl. C08h 17/14
U.S. Cl. 106—288 Q 13 Claims

Process for the manufacturing of phthalocyanine pigments having improved brightness, gloss, transparency and flow properties by treating with a polar aliphatic solvent at least partially water-miscible, a metal Pc and a minor proportion of a copper Pc derivative having the formula



wherein CuPc represents the copper phthalocyanine residue, either chlorinated or unchlorinated, R represents an alkyl group having from 1 to 20 carbon atoms or an aryl group, and R_1 represents hydrogen or an alkyl group having from 1 to 20 carbon atoms or an aryl group, the alkyl or aryl groups being either unsubstituted or substituted by hydroxyl, amino, alkylamino or amide substituents, and x and y each represent 1, 2 or 3 with the proviso that the sum of x and y is 2, 3 or 4.

3,764,361

PHTHALOCYANINES

Jean Andre Paul Kienzle and Michel Ernest Antoine Huille, Creil, and Louis Antoine Cabut, Nogent-sur-Oise, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,196

Claims priority, application France, Nov. 20, 1970, 7041757

Int. Cl. C08h 17/14
U.S. Cl. 106—288 Q 6 Claims

Phthalocyanine compounds of the formula:

$$Pc\{CH_2—X—A\}_n \quad (I)$$

in which Pc represents a phthalocyanine residue, X represents an oxygen or sulphur atom, A represents an aryl radical which is unsubstituted or substituted by at least one alkyl group having up to 6 carbon atoms and n represents a whole number from 1 to 8; pigment mixtures containing such compounds; process for the stabilisation of phthalocyanine pigments which comprises incorporating therein at least one compound of Formula I; and paints, lacquers, enamels, inks and plastic materials coloured by means of a phthalocyanine pigment mixture containing a compound of Formula I.

3,764,362

TREATMENT OF PIGMENTS

John James Hinley, Middlesbrough, and Keith Goldsbrough, Stockton-on-Tees, England, assignors to British Titan Limited, Billingham, Teesside, England

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,705

Claims priority, application Great Britain, Apr. 7, 1971, 9,035/71; Dec. 7, 1971, 56,718/71

Int. Cl. C09c 1/36
U.S. Cl. 106—300 23 Claims

A process for the pelletisation of a pigment in which the pigments are passed in a finely-divided form through a sieve having a mesh number of not less than 5 and not greater than 44 according to British Standard specification No. 410 (1943) and then trundling the treated pigment in dry form until the desired pellets have been formed, preferably the pigment has a bulk density of at least 0.34 gram per millilitre prior to sieving.

3,764,363

SURFACE TREATMENT OF MICROPOROUS SURFACE OF SHEET MATERIAL AND PRODUCT PRODUCED

Frank Peter Civardi, Wayne, N.J., and Hans Georg Kuenstler, Whitestone, N.Y., assignors to Inmont Corporation, New York, N.Y.

Continuation-in-part of applications Ser. No. 843,425, July 22, 1969, and Ser. No. 867,762, Oct. 20, 1969. This application July 21, 1970, Ser. No. 56,936

Int. Cl. B32b 5/18; B44c 1/20; B44d 1/14
U.S. Cl. 117—10 48 Claims

A sheet material having a microporous surface of elastomeric polyurethane is treated to produce a sheet, which has greater waterproofness and still transmits water vapor, by applying to it a coagulated layer of elastomeric polyurethane. Preferably the coagulated layer is produced by applying a pigmented polyurethane solution to the sheet while it is wet with a non-solvent. The coagulated layer may then be treated in various ways; e.g. it may be embossed or treated with a solvent to

form a fused glossy moisture vapor-transmitting surface. The product is suitable for use as a leather substitute in shoe uppers.

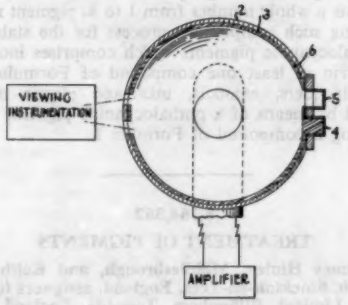
3,764,364

ARTICLE OF MANUFACTURE HAVING THEREON A STABLE REFLECTIVE COATING CONTAINING FLUORINATED ALIPHATIC LONG CHAIN ADDITION POLYMERS

Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 1, 1968, Ser. No. 741,502

Int. Cl. B44d *1/094*; G01j *1/04*; G01n *21/48*
U.S. Cl. 117—18 12 Claims



Fluorinated aliphatic long chain addition polymers comprised of at least one monomer having at least one fluorine atom attached to a chain carbon atom are used in various environments for their ability to reflect a high percentage of incident light having a wave length in the 2400 to 8000 angstrom region. These reflectance polymers may be in pressed powder form or in film form and thus are especially applicable as reflectance standards and reflectance coatings particularly in light integrating spheres of spectrophotometers.

3,764,365

ADHESION IMPROVING AGENT FOR URETHANE COATINGS ON RUBBER

Joe S. Duncan, Mogadore, and Otto C. Elmer, Akron, Ohio, assignors to The General Tire & Rubber Company

No Drawing. Continuation-in-part of application Ser. No. 127,032, Mar. 22, 1971. This application Jan. 21, 1972, Ser. No. 219,827

Int. Cl. B32b *5/02*, *5/04*
U.S. Cl. 117—33 4 Claims

This invention concerns an adhesive and coating composition for rubber substrates comprising an isocyanate-reactive polyester, a block isocyanate, a catalyst for heat releasing the blocked isocyanate, and from 0.5 to 10.0 weight percent, based upon the combined weight of the polyester and the isocyanate, of a material selected from the group consising of finely divided particulate aerogel silicas and silicates, finely divided particulate anhydrous silicas and silicates, and mixtures thereof wherein the specific surface area of the material is greater than about 50 $m.^2/gm.$

3,764,366

METHOD AND APPARATUS FOR MAKING COLOR CATHODE RAY TUBE

Chikayoshi Ninagawa, Shigeya Ashizaki, and Masahiro Okamoto, Takatsuki, Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Oct. 30, 1970, Ser. No. 85,413

Claims priority, application Japan, Oct. 30, 1969, 44/87,362

Int. Cl. H01j *9/22*, *29/32*
U.S. Cl. 117—33.5 CM 2 Claims

In order to avoid undesirable loss of color disparity in the performance of a cathode ray tube of the multi-beam, multi-color, shadow mask type, it is preferable to limit the diameter of each color dot on the phosphor screen. In the process of fixing phosphor dots on a phosphor screen inside a face plate of the cathode ray tube during the fabrication thereof, a specially shaped light-emitting source is employed, in order to limit the diameter of each phosphor dot to no larger than that of each aperture in the shadow mask through which ultraviolet rays strike the screen to fix said dot. Said light-emitting source is formed to have a light-emitting face which is shaped in the form of a ring disposed in parallel relationship with the face plate and which is formed on the top of a light conduit made of a transparent material.

3,764,367

TELEVISION PICTURE TUBE HAVING AN ELECTRON SCATTERING PREVENTION FILM

Hideaki Mizuno, Tokyo, and Naoki Akiyama, Ninomiya, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan

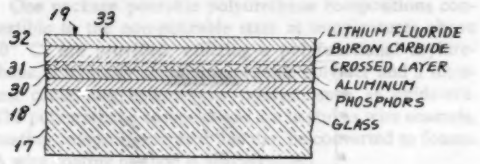
Filed Apr. 15, 1971, Ser. No. 134,329

Claims priority, application Japan, Apr. 17, 1970, 45/32,837

Int. Cl. B44d *1/14*; H01j *29/18*
U.S. Cl. 117—33.5 C 3 Claims

A television picture tube has an electron scattering prevention film provided on inner surface of a face plate. The electron scattering prevention film comprises at least the following three layers: a metal backing layer deposited on a phosphor layer; a first electron scattering prevention layer deposited on the metal backing layer composed of a first electron scattering prevention material having a small atomic number than that of the material constituting the metal backing layer; and a second electron scattering prevention layer deposited on the first electron

scattering prevention layer composed of a second electron scattering prevention material having a smaller atomic number than that of the material constituting the metal backing layer. A bimetal action which occurs between the metal backing layer and the first electron scattering prevention layer is cancelled by a bimetal action which



occurs between the first electron scattering prevention layer and the second electron scattering prevention layer whereby the electron scattering prevention film is prevented from being distorted to an extent that the metal backing layer peels off from the phosphor layer under variation of temperature.

3,764,368

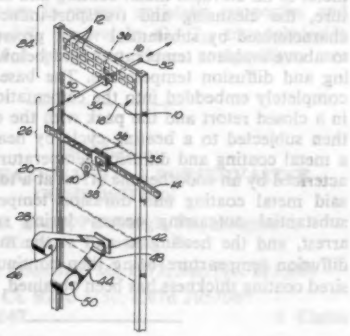
LEAD IODIDE FILM

John H. Jacobs, Altadena, and Richard A. Corrigan, Pasadena, Calif., assignors to Bell & Howell Company

Original application Feb. 20, 1970, Ser. No. 12,914, now Patent No. 3,661,586. Divided and this application Feb. 22, 1972, Ser. No. 228,412

Int. Cl. G03c 1/72, 5/24

U.S. Cl. 117—34 **8 Claims**



A lead iodide photographic film having photosensitivity which is low at room temperature but which can be portionally increased. Precursors of the lead iodide can be coated in separate layers on a film support. A dry developing agent, such as ascorbic acid, and a heat trigger, such as acetamide, can be incorporated to enhance the temperature sensitive photoresponse of the film. The image can be fixed with an alkaline solvent or by plating a more noble metal on the lead, such as copper. A method and mechanism are disclosed for add-an-image exposure and processing.

3,764,369

PRESSURE SENSITIVE RECORDING UNIT

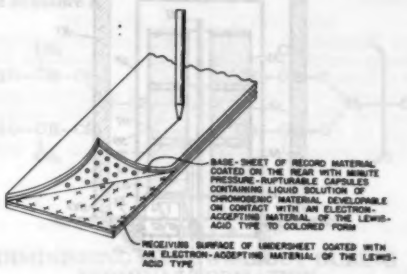
Troy E. Hoover, Kettering, and Arthur J. Wright, Cincinnati, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Original application Jan. 21, 1969, Ser. No. 792,324.

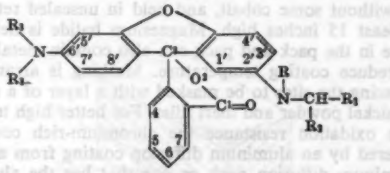
Divided and this application Apr. 21, 1971, Ser. No. 136,250

Int. Cl. B41m 5/22

U.S. Cl. 117—36.2 **7 Claims**


BASE-SHEET OF RECORD MATERIAL COATED ON THE REAR WITH MINUTE PRESSURE-RUPTURABLE CAPSULES CONTAINING LIQUID SOLUTION OF CHROMOGENIC MATERIAL DEVELOPABLE ON CONTACT WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE TO COLORED FORM
RECEIVING SURFACE OF UNDERSHEET COATED WITH AN ELECTRON-ACCEPTING MATERIAL OF THE LEWIS-ACID TYPE

A novel chromogenic material of normally colorless form is disclosed, having a structural formula:



wherein R, R_1 and R_3 represent hydrogen radicals and alkyl radicals, and R_2 represents ester, acyl, alkylene and phenyl radicals; said materials assuring a colored form upon reactive contact with a Lewis acid molecule. Examples include 2'-[(carbo-tert-butoxy)methylamino]--6'-diethylaminofluoran; 2'-[N-(carbethoxymethyl)-N-methylamino] - 6'-diethylaminofluoran; 2'-allylamino-6'-diethylaminofluoran; 6'-diethylamino-2'-[N-(N',N'-dimethylcarbamoylmethyl)amino]fluoran; 6' - diethylamino - 2'-(N-phenacyl)aminofluoran; 2' - [(carbomethoxy)methylamino[- 6'-diethylaminofluoran and 2'-[-(α-carbethoxyethyl) amino]-6'-diethylaminofluoran.

3,764,370

PROCESS FOR COATING POLYMERIC SURFACES

Robert A. Bragole, Danvers, Mass., assignor to USM Corporation, Boston, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 887,348, Dec. 22, 1969. This application Nov. 23, 1971, Ser. No. 201,541

Int. Cl. B44d 1/50, 5/12

U.S. Cl. 117—47 A **8 Claims**

The process of coating a polymer resin including the steps of cross linking the surface of the resin and generating "living" radicals at the surface of the resin by ultraviolet light radiation and thereafter applying a polymeric resin coating composition including groups which will combine with the suface through the action of the "living" radicals.

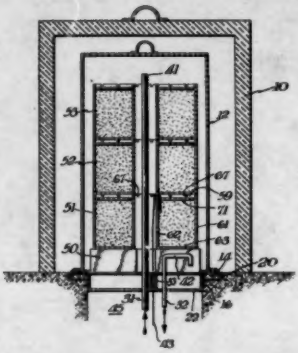
3,764,371
FORMATION OF DIFFUSION COATINGS ON NICKEL CONTAINING DISPERSED THORIA

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Co., Inc., Wilmington, Del.

Continuation-in-part of application Ser. No. 837,811, June 30, 1969. This application Nov. 18, 1970, Ser. No. 90,682

Int. Cl. C23c *9/02*

U.S. Cl. 117—71 M 11 Claims



Rich chromium diffusion coating on TD nickel or TD Nichrome is obtained in one step by embedding work in chromium diffusion coating pack containing nickel with or without some cobalt, and held in unsealed retort cup at least 15 inches high. Magnesium halide is helpful to have in the pack and pack can also contain metallic iron to reduce coating temperature. Masking is arranged by covering the sites to be masked with a layer of a mixture of nickel powder and inert filler. For better high temperature oxidation resistance the chromium-rich coating is covered by an aluminum diffusion coating from a simple aluminum diffusion pack or one that has the aluminum mixed with chromium. Low temperature aluminum diffusion is more uniform when pack energizer is aluminum chloride or other material that does not generate nitrogen. A manganese-containing aluminizing pack gives better protection than a simple aluminizing pack, particularly against marine corrosion, and when there is a conversion coating applied over the aluminizing. Conversion coating mixture wets aluminized ferrous surface better when the surface has been treated with alkali to blacken it, and the black is then removed with the help of nitric acid. Aluminized superalloy can be heated in air to whiten it, then cleaned to give product having more adherent case. Also adding some lanthanum or yttrium to superalloy like WI 52 gives better high temperature resistance.

3,764,372
METHOD OF IMPROVING THE BOND OF POLYTHIOL SEALANT TO BUILDING MATERIALS

Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,895

Int. Cl. B32b *13/12*; B44d *1/14*

U.S. Cl. 117—72 4 Claims

An alkaline earth metal hydroxide is added to a primer composition to produce better bonding of polysulfide based sealants to calcareous or argillaceous based building materials. In the preferred embodiment calcium hydroxide is added to a chlorinated rubber-methylene di-[p-phenylene isocyanate] priming composition to produce a concrete primer of increased adhesion for bonding liquid curable polythiol compound based sealant compositions to structural element substrates.

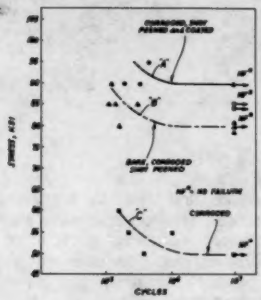
3,764,373
DIFFUSION COATING OF METALS

Kenneth K. Speirs, Kimberly, and Martin Weinstein, San Antonio, Tex., assignors to The Chromalloy American Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 878,596, Nov. 21, 1969. This application Feb. 7, 1972, Ser. No. 224,146

Int. Cl. C23c *11/00*, *13/00*

U.S. Cl. 117—107.2 P 7 Claims



An improved method for diffusion coating a metal, e.g. aluminum, into the surface of a base metal article, e.g. chromium-containing steel, by the pack cementation process is provided which enables the use of cementation temperatures as low as 750° to 775° F. In essence the method comprises, providing a cementation pack comprised of particulate coating metal (e.g. aluminum), the cementation pack having uniformly mixed therewith an amount of a dry cleansing and transport-inducing agent selected from the group consisting of metal halides and iodine (such as $AlCl_3$) effective to promote the deposition of said coating metal at an elevated metal coating and diffusion temperature, the cleansing and transport-inducing agent being characterized by substantial vapor pressure when heated to above ambient temperature and below the metal coating and diffusion temperature. The base metal article is completely embedded into the cementation pack confined in a closed retort and the pack with the embedded article then subjected to a heating cycle by heating the pack to a metal coating and diffusion temperature at a rate characterized by an endothermic arrest at a temperature below said metal coating and diffusion temperature, whereby substantial outgassing occurs during said endothermic arrest, and the heating to and at the metal coating and diffusion tempearture being then continued until the desired coating thickness has been obtained.

3,764,374
PROCESS FOR PLACING MODIFIERS WITHIN POLYESTER FIBERS AND FILMS

Kenneth R. Barton and John R. Caldwell, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 21, 1970, Ser. No. 56,957

Int. Cl. B44d *1/48*

U.S. Cl. 117—119.6 14 Claims

A process for placing modifiers within a polyester fiber or film comprising:

(A) applying a modifier to the surface of the polyester fiber or film, and

(B) heating the fiber or film in a zone having a volume less than about 150 times the volume of the fiber or film.

3,764,375

POLYURETHANE WIRE COATING METHOD

Charles M. Orlando, Schenectady, and Carl M. Emerick, Mechanicville, N.Y., and Robert A. Jerussi, Fairfax, Va., assignors to General Electric Company

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,022

Int. Cl. B44d *1/42*; C09d *3/72*

U.S. Cl. 117—128.4 4 Claims

One package pourable polyurethane compositions convertible to the non-pourable state at temperatures above 70° C. are provided, utilizing a polyfunctional arylurethane, a hydroxy containing organic polymer and a nitrogen containing heterocyclic catalyst, such as imidazole. The polyurethane compositions are useful as wire enamels, coating compositions, etc., and can be converted to foams. A wire coating method is also provided.

3,764,376

ANTISTATIC RESINOUS COMPOSITIONS

John Duncan Wagner, Chester, England, and Hans-Werner Friedrich Michael Finck, Wedel, Holstein, Germany, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Original application May 28, 1969, Ser. No. 830,217, now Patent No. 3,574,156. Divided and this application Oct. 19, 1970, Ser. No. 82,059

Claims priority, application Great Britain, May 31, 1968, 26,130/68

Int. Cl. B32b *27/06*; C09k *3/16*

U.S. Cl. 117—138.8 E 4 Claims

The invention relates to the use of fatty acid glycerides containing at least 50% by weight, preferably at least 80% by weight of a saturated linear C_6–C_{10} monoglyceride for reducing the surface electrical resistance of thermoplastic polymers such as polyethylene, polypropylene, polyvinylchloride and polystyrene. Resinous compositions possessing improved antistatic properties and comprising 0.05–7% by weight C_6–C_{10} monoglyceride and processes for preparing these compositions are provided.

3,764,377

WOOD TREATED WITH A PRESERVATIVE COMPOSITION

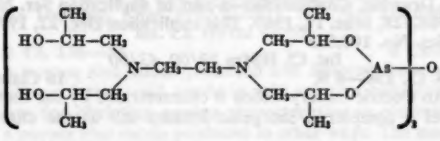
Woodrow E. Kemp, Pittsburgh, Pa., assignor to Koppers Company, Inc.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,080

Int. Cl. B27c *3/50*; C07d *105/06*

U.S. Cl. 117—147 1 Claim

Wood treated with a preservative composition comprised of creosote in which is dissolved the novel arsenic-containing compound 1 - (bis(2 - hydroxypropyl)nitriloethylene) - 5 - arsa - 1 - aza - 4,6 - dioxacyclooctyl As-ether whose structure is



3,764,378

WOOD TREATED WITH A PRESERVATIVE COMPOSITION

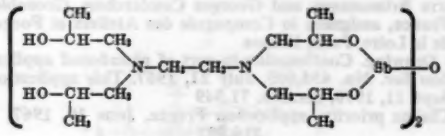
Woodrow E. Kemp, Pittsburgh, Pa., assignor to Koppers Company, Inc.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,082

Int. Cl. B27k *3/50*; C07f *9/92*

U.S. Cl. 117—147 1 Claim

Wood treated with a preservative composition comprised of creosote in which is dissolved the novel antimony containing compound 1-(bis(2-hydroxypropyl)nitriloethylene) - 5-stiba-1-aza-4,6 - dioxacycloctyl Sb-ether whose structure is



3,764,379

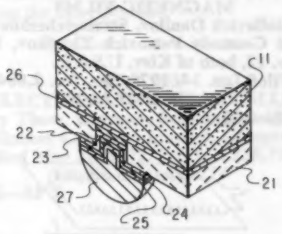
DIMINISHING MASK WEAROUT DURING TERMINAL FORMATION

James W. Tuttle, Wappingers Falls, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,329

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 4 Claims



Terminals for a semiconductive device are formed by successively depositing chromium, copper and gold through a mask into the terminal holes of the device. Wearout of the molybdenum masks employed during formation of the terminals is greatly diminished by coating the mask with a film of copper, typically 700–3000 A. units thick prior to the multimetal deposition. The cleaning solution, typically sodium cyanide, required to remove the copper-chromium-copper-gold layer from the copper coated mask is easier on the mask and causes less wearout than the solution required to remove the chromium-copper-gold deposit from uncoated molybdenum masks.

3,764,380

ELECTRODE HAVING A COATED POSITIVE CONTACT SURFACE

Phillip A. Grossman, Lakewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

No Drawing. Filed June 3, 1971, Ser. No. 149,793

Int. Cl. B44d *1/02*, *1/34*

U.S. Cl. 117—227 11 Claims

A positive electrode of the pasted or compressed powder type for an electrolytic cell and a process for its manu-

facturers is described, the electrode including in admixture an active mass, a conductive medium, and optionally a binder, the mixture being applied to a conductive collector/substrate. Any one or more of the active mass, conductive medium or collector/substrate or other positive contact surface carries a coating thereon formed by codepositing a selected metal e.g., nickel, with a material selected from phosphorus, sulfur, or their compounds. This codeposited alloy improves the overall corrosion resistance of the electrode giving it an improved cycle life and internal conductivity when incorporated into an electrolytic cell.

3,764,381
MAGNETIC STEEL PROCESS

Pierre Brissonneau and Georges Couderchon, Grenoble, France, assignors to Compagnie des Ateliers et Forges de la Loire, Paris, France

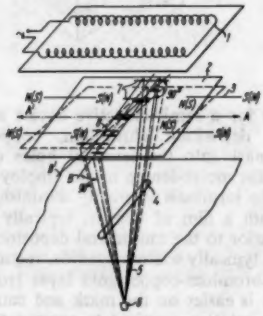
No Drawing. Continuation-in-part of abandoned application Ser. No. 655,005, July 21, 1967. This application Sept. 11, 1970, Ser. No. 71,349
Claims priority, application France, June 19, 1967, 110,897
Int. Cl. H01f *7/02*
U.S. Cl. 117—234 **10 Claims**

Each face of a sheet or strip of magnetic steel is coated with a thin layer of at least one element of aluminum, silicon, cobalt and germanium, which element is diffused into the sheet until the element is distributed therein in a concentration decreasing from the faces to the core of the sheet, and the resulting product is submitted to heat treatment under the influence of a magnetic field.

3,764,382
METHOD OF PRODUCING ANISOTROPIC MAGNETIC FILMS

Nikolai Anatolievich Danilov, Strategicheskoe shosse 39a, kv. 4, and Gennady Petrovich Zharikov, Petrovskaya ulitsa 5, kv. 12, both of Kiev, U.S.S.R.

Filed Jan. 14, 1970, Ser. No. 2,804
Int. Cl. H01f *10/00*
U.S. Cl. 117—238 **2 Claims**

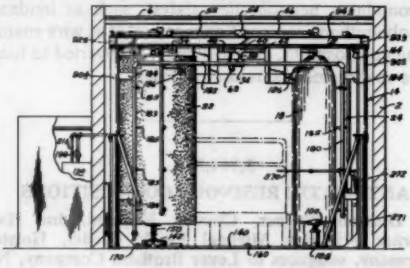


A method of producing an anisotropic magnetic film by vacuum condensation at a temperature below 350° C. on a flat support which is moved in a magnetic field across a slotted diaphragm provided in a screen. The support moves above the diaphragm and above a magnetic alloy evaporator disposed under the diaphragm. A first coating of alloy vapors is condensed on the support by moving the support above the diaphragm in such a tilted position that the angle of incidence of a beam of evaporated atoms is perpendicular to one side edge of the support where after the support is tilted to a second position in which the angle of incidence of the beam of evaporated atoms in perpendicular to the other side edge of the support and the support again is moved above the diaphragm to apply a second alloy coating on the first coating to form a uniform anisotropic magnetic film over the whole area of the support.

3,764,383
APPARATUS AND METHOD FOR WASHING TRUCKS AND BUSSES

Arthur D. McBurnett, Dallas, Tex., assignor to Hustler Industries, Inc., Houston, Tex.

Filed June 4, 1971, Ser. No. 150,024
Int. Cl. B08b *1/04*; B60s *3/06*
U.S. Cl. 134—6 **27 Claims**



Rotating brushes are positioned at each side of a path along which a vehicle moves for scrubbing sides of the vehicle. One of the brushes is mounted on a carriage which travels transversely across the path of the vehicle to scrub the front and rear ends thereof. The traveling brush has cables connected between upper and lower ends thereof for maintaining the brush in a vertical position. Each side and each end of the vehicle is scrubbed by brushes rotating in opposite directions or by a single brush which moves across surfaces twice rotating in opposite directions on each pass.

3,764,384
PROCESS FOR REMOVING POLYVINYL HALIDE RESIDUES FROM PROCESSING EQUIPMENT

Rene P. Berni, Oradell, N.J., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed July 24, 1970, Ser. No. 58,201
Int. Cl. B08b *3/08, 3/10, 9/08*
U.S. Cl. 134—12 **10 Claims**

A process for removing residues of polymeric materials particularly vinyl halide homopolymers from processing equipment by a solvent cleaning technique based upon contacting such residues within the equipment with N-methyl pyrrolidone and thereby loosening, suspending or dissolving same. The contacting operation is preferably by means of a spray applied at elevated temperatures. Provision is made for recycling the solvent and recovering the solvent and/or the polymeric residues.

3,764,385
ELECTRIC BATTERY USING COMPLEXED INORGANIC LITHIUM SALTS AS CHARGE TRANSFER AGENT

Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Linden, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 808,328, Mar. 18, 1969. This application Dec. 22, 1970, Ser. No. 100,813
Int. Cl. H01m *29/00, 43/00*
U.S. Cl. 136—6 R **16 Claims**

An electric battery which is characterized by use therein of a complexed inorganic lithium salt as the charge

transfer agent between the electrodes. The electric battery can be a primary or a secondary electrical energy storage device, and in a preferred embodiment the complexed lithium salt is dissolved in an aromatic solvent.

3,764,386

CASTING PLATE STRAPS TO BATTERY PLATES AND A LEAD-ACID STORAGE BATTERY UTILIZING SAME

Renard E. Mix, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Original application Aug. 25, 1969, Ser. No. 852,605, now Patent No. 3,652,337. Divided and this application Oct. 21, 1971, Ser. No. 191,456
Int. Cl. H01m *35/32, 39/00*
U.S. Cl. 136—26 2 Claims

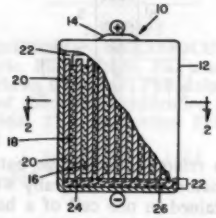
A lead-acid storage battery group containing positive and negative plates with supporting lead alloy grids, separators between the plates and plate straps cast onto the grids. The plate straps are bonded to the grids through a lead alloy bond having a melting point about 200° F. lower than the melting point of the grid alloy.

3,764,387

NON-TREEING ELECTROLYTE WICK

Robert E. Stark, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Jan. 28, 1972, Ser. No. 221,726
Int. Cl. H01m *3/04, 43/02*
U.S. Cl. 136—28 17 Claims



A relatively non-absorbent, yet surface wettable material is positioned within a portion of the space between the edge of the cell pack and container of an electrochemical cell. The surface wettable material improves electrolyte distribution within the cell by a wicking or capillary mechanism and yet prevents dendritic growth from bridging around the edge of the separators by providing an extended growth path permeated by an oxidizing gas. In an alternative embodiment, a relatively absorbent material is interposed between the surface wettable material and container to function as an electrolyte well for proper distribution and incorporation of additional electrolyte within the cell.

3,764,388

CHLORIDE FREE AMALGAMATION OF ZINC POWDER USING ACETIC, OXALIC AND BORIC ACIDS

Nikola Marincic, Winchester, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,090
Int. Cl. H01m *43/02*
U.S. Cl. 136—31 8 Claims

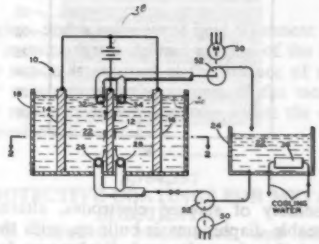
A porous zinc anode produced and adapted for use in alkaline solution, said anode in said solution constituting means for obviating gassing characteristics as contrasted to a porous zinc anode produced in other ways. The essential step in the invention is free acid amalgamation with an acid other than hydrochloric acid in order to form a water soluble salt of the free acid.

3,764,389

METHOD OF PRODUCING A ZINC ALLOY POWDER AND AN ELECTRODE THEREFROM

Chien Hsia, 6 Bradfield Ave., and Franciszek Przybyla, 255 Glen Lake Ave., Apt. 2414, both of Toronto, Ontario, Canada

Filed Mar. 22, 1971, Ser. No. 126,481
Int. Cl. H01m *43/02*
U.S. Cl. 136—31 9 Claims



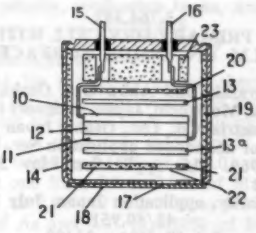
An electrode of a zinc alloy powder, with the alloy particles individually amalgamated to assure diminished gassing from an electrode formed of the alloy powder in a compressed form for use in a battery, and the process for making the alloy powder.

3,764,390

ELECTRICAL THERMAL CELLS

David Henry Thow, Glasgow, Scotland, assignor to Mine Safety Appliances Company Limited, Glasgow, Scotland

Filed May 30, 1972, Ser. No. 258,733
Int. Cl. H01m *21/14*
U.S. Cl. 136—83 T 2 Claims



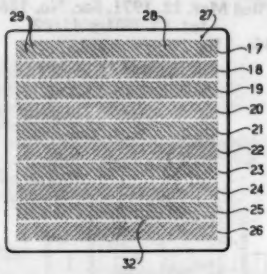
The invention consists of an electrical thermal cell having a housing containing a cathode and anode connected to terminals mounted on the housing. Sandwiched between the anode and the cathode is an electrolyte which is solid at normal temperatures and which activates the cell when molten. A layer of Thermite is disposed within the housing.

The housing has an opening which is closed by a seal formed of a substance which melts or ruptures when subject to the action of external gases at a temperature which will ignite the Thermite. When this occurs the said gases will ignite the Thermite and this initiates the activation of the cell.

3,764,391
FUEL CELL AND ELECTRODE STRUCTURE THEREFOR

Bernard Warszawski, Paris, Henri Vandenberghe, Vincennes, and Bernard Verger, Palaiseau, France, assignors to Societe Generale de Constructions Electriques et Mecanique (Alsthom), Paris, France

Filed Sept. 9, 1970, Ser. No. 70,636
Int. Cl. H01m 27/12
U.S. Cl. 136—86 D 25 Claims

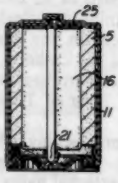


An assembly of stacked electrodes, alternating with semipermeable diaphragms is built up, with the marginal portions of the electrodes and diaphragms formed with flow duct openings to direct electrolyte and reactants to flow lengthwise of the stack of electrodes and diaphragms and, by means of channels formed in the electrodes, to wash over the faces of the electrodes; the electrode face is embossed with projections arranged in a plurality of adjacent elementary groups, each in itself parallel to the marginal portions of the electrode, the projections themselves being formed in arrays of elongated ridges, peak points, or the like, which may be continuous or discontinuous, and which are inclined with respect to the marginal portions, the direction of inclination of adjacent groups being opposite towards each other so that the median flow direction of electrolyte and reactant washing over the face of the electrodes will be approximately perpendicular to the marginal portions from which the flow emanates.

3,764,392
INSIDE-OUT PRIMARY DRY CELL WITH CARBON-RESIN FILM ON INSIDE SURFACE OF CONTAINER

Masahiro Kuwazaki and Akira Ota, Osaka, and Toshikatsu Takata, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of abandoned application Ser. No. 840,998, July 11, 1969. This application May 3, 1971, Ser. No. 139,842
Claims priority, application Japan, July 16, 1968, 43/50,951
Int. Cl. H01m 21/00
U.S. Cl. 136—107 8 Claims

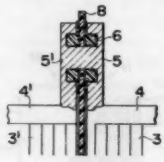


An inside-out dry cell having excellent performances, particularly in heavy-load discharge, which comprises a positive electrode-constituting, top-closed cylindrical collector having the inner surface thereof coated with a film consisting of a carbonaceous substance and a synthetic resin, and simultaneously serving as an outer casing of the cell; a cathode mixture charged in said positive electrode-constituting collector; a zinc negative electrode inserted into the center of said cathode mixture and having formed on the surface thereof a paste layer formed of a paste-containing resin material and an ion-permeable barrier membrane of polyvinyl alcohol superposed on said paste layer for blocking transfer of the paste material into the cathode mixture; and a metallic closure plate adapted to close the opening of said positive electrode-constituting collector and including a conductor adapted to grip the connecting end of said zinc negative electrode to establish electrical connection between said zinc negative electrode and said closure plate assembly in an engaged position of said closure plate.

3,764,393
STORAGE BATTERY AND A METHOD OF PRODUCING THE SAME

Tadasu Fujimoto, Takatsuki, Japan, assignor to Yuasa Battery Company Limited, Takatsuki, Osaka Prefecture, Japan

Filed Jan. 19, 1972, Ser. No. 218,868
Claims priority, application Japan, Sept. 25, 1971, 46/74,815
Int. Cl. H01m 5/00
U.S. Cl. 136—134 R 9 Claims



This invention relates to a storage battery wherein a connecting conductor formed integrally with a strap of a plate group contained in one cell of a battery case partitioned into a plurality of cells and a similar connecting conductor in an adjacent cell are electrically connected with each other through an aperture in the partition made of a synthetic resin between the cells, and the connecting conductor on the side of at least one of the adjacent cells is formed by embedding in advance a synthetic resin molding to be liquid-tightly bonded with the above mentioned partition in such electrically conductive metal as, for example, lead or a lead alloy, and particularly to improvements in the construction of an intercell electric connection for such storage batteries and a process for producing the same. This is to make favorable electrical connection between cells through an aperature in the partition and is very effective to prevent any leakage through the aperature.

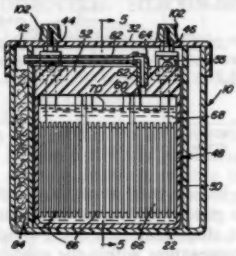
3,764,394
WET CELL LANTERN BATTERY

Albert D. Phillips, P.O. Box 1, Clarksville, Ark. 72830

Filed Nov. 5, 1971, Ser. No. 196,167
Int. Cl. H01m 1/02, 1/08
U.S. Cl. 136—166 4 Claims

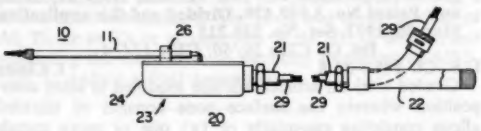
An enclosure for a small wet cell battery of the type utilized on lightweight vehicles, such as motorcycles, is provided and the enclosure defines a substantially sealed structure for an associated battery. The enclosure includes a generally rectangular top wall having upstanding terminals secured therethrough at points spaced along the center line of the top wall and specially contoured con-

necting straps or brackets are connected and extend between the inner ends of the top wall terminals and the battery posts of the battery within the enclosure. Further, the top wall includes depending cylindrical open bottom wells whose lower ends seat tightly against the top of the associated battery about the fill openings formed therethrough with the removable plugs for the fill openings projecting upwardly into the wells of the



top wall. In addition, one end of the enclosure interior defines a vent well disposed exteriorly of the battery receiving cavity within the enclosure and the vent well is closed by the top wall of the enclosure, the top wall including a small diameter vent opening communicating with the upper end of the well and an upper portion of the interior of the well being communicated with a specially provided vent opening in the top of the battery disposed within the enclosure.

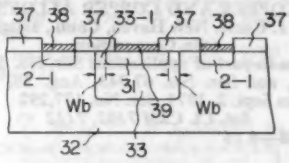
3,764,395
IMMERSION THERMOCOUPLE
Gerald P. Boyle, Philadelphia, Pa., assignor to Leeds & Northrup Company, Philadelphia, Pa.
Continuation of abandoned application Ser. No. 724,463, Apr. 26, 1968. This application Feb. 22, 1971, Ser. No. 117,771
Int. Cl. H01v *1/04*
U.S. Cl. 136—234 **1 Claim**



A low-cost, throw-away, plug-in thermocouple probe having an end for immersion in a bath of molten material and bare wires at the other end shaped in a manner to form a polarized connector for reception in a female connector which may additionally have other probe orienting structure to insure connection of the parts of corresponding polarity.

3,764,396
TRANSISTORS AND PRODUCTION THEREOF
Yasuo Tarui, Tokyo, Toshihiro Sekigawa, Yokohama, and Yutaka Hayashi, Tokyo, Japan, assignors to Kogyo Gijutsuin (also known as Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Japanese Government), Tokyo, Japan
Filed Apr. 16, 1970, Ser. No. 29,006
Claims priority, application Japan, Sept. 18, 1969, 44/73,847, 44/73,848
Int. Cl. B01j *17/00*; H01l *7/54, 11/14*
U.S. Cl. 148—1.5 **4 Claims**

A planar semiconductive structure is produced by introducing a first impurity into the semiconductor substrate by ion implantation to form a first semiconductor region, a second impurity whose conductivity type is opposite to that of the first impurity is introduced into the first semiconductor region by ion implantation or impurity diffusion to form a second semiconductor region whose conductivity type is opposite to that of the first semicon-



ductor region, and a subsequent heat treatment is applied in such a manner that a defined portion of the first semiconductor region is exposed at the surface of said semiconductor substrate and the volume of the second semiconductor region is disposed wholly within the volume of the first semiconductor region.

3,764,397
PROTECTIVE COATINGS FOR METAL SUBSTRATES
Norman S. Bornstein, Middletown, and Michael A. De Crescente, Wethersfield, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
No Drawing. Filed June 11, 1971, Ser. No. 152,392
Int. Cl. C23f *7/00*
U.S. Cl. 148—6 **6 Claims**

Refractory metals, especially columbium, can be protected from oxidizing atmospheres by forming a continuous layer of refractory metal disilicide on the exposed surfaces. Such coatings can be made by forming the subsilicide of the refractory metal and then converting at least a part of the subsilicide to the corresponding disilicide.

3,764,398
METHOD FOR PRODUCING STEEL SHEETS HAVING RESISTANCE AGAINST RUST FORMATION
Toshiro Nishihara, Hidejiro Asano, Shigeyoshi Maeda, and Yashichi Oyagi, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
No Drawing. Filed Aug. 6, 1971, Ser. No. 169,845
Claims priority, application Japan, Aug. 10, 1970, 45/69,848
Int. Cl. C23f *7/04*
U.S. Cl. 148—6.14 R **2 Claims**

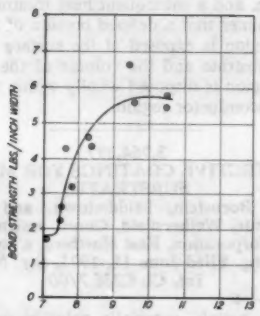
A method for producing a steel sheet having resistance against rust formation comprising applying an oxidation treatment to a steel sheet containing not more than 0.15% of C, not more than 0.15% of Si, not more than 0.02% of S, 0.005 to 0.15% of P, 0.01 to 0.25% of Cu, and at least one from 0.3 to 2.0% of Mn, 0.05 to 2.0% of Cr, 0.05 to 2.0% of Al, 0.01 to 0.2% of Sb, 0.001 to 0.20% of As and 0.01 to 0.20% of Bi, with the balance being substantially iron and unavoidable impurities, whereby a non-visible oxide film composed of γ-Fe_2O_3 is formed on the steel sheet.

3,764,399
METHOD OF PRODUCING TARNISH RESISTANT COPPER AND COPPER ALLOYS
Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation
Continuation-in-part of applications Ser. No. 59,684, July 30, 1970, now Patent No. 3,677,828, and Ser. No. 67,943, Aug. 28, 1970, now Patent No. 3,716,427. This application Sept. 2, 1971, Ser. No. 177,291
Int. Cl. C23f *7/02, 7/12*
U.S. Cl. 148—6.15 R **11 Claims**

The instant invention comprises providing copper or a copper alloy which has on its surface a uniform glassy

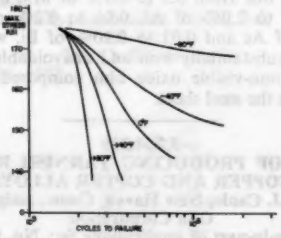
like and substantially pore free coating of copper phosphate, rinsing the coated material for at least two seconds in water at a pH of from 4.9 to 6.3, at a temperature of 90° C. to the boiling point and drying.

3,764,400
METHOD OF PRODUCING TARNISH RESISTANT COPPER AND COPPER ALLOYS
Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation
Continuation-in-part of applications Ser. No. 59,684, July 30, 1970, and Ser. No. 67,943, Aug. 28, 1970. This application Sept. 2, 1971, Ser. No. 177,292
Int. Cl. C23f 7/02, 7/12
U.S. Cl. 148—6.16 12 Claims



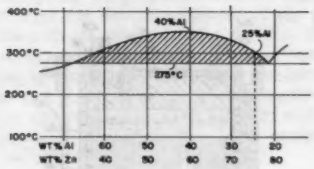
The instant invention comprises providing copper or a copper alloy which has on its surface a uniform glassy like and substantially pore free coating of copper phosphate, rinsing the coated material for at least two seconds in water at a pH of at least 8.0, at a temperature of 90° C. to the boiling point and drying.

3,764,401
METALLIC ARTICLES AND THE MANUFACTURE THEREOF
Louis J. Hrusovsky, Bloomfield Hills, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Continuation-in-part of abandoned application Ser. No. 681,487, Nov. 8, 1967. This application Nov. 17, 1970, Ser. No. 90,343
Int. Cl. C21d 7/06
U.S. Cl. 148—11.5 R 9 Claims



The manufacture of articles from non-austenitic metallic materials by a technique in which the article is formed to essentially its final configuration; cooled; and, while cooled, worked to produce residual compressive stresses in one or more surface portions of the article.

3,764,402
CREEP-RESISTANT, HIGH-STRENGTH Zn-Al AND Zn-Al-Mg ALLOYS
Leander A. Neumeier and John S. Risbeck, Rolla, Mo., assignors to the United States of America as represented by the Secretary of the Interior
Filed Feb. 29, 1972, Ser. No. 230,397
Int. Cl. C22c 17/00; C22f 1/16
U.S. Cl. 148—12.7 9 Claims



Metal form having good strength, creep-resistance, useful ductility is produced by heating ingot of zinc, 25–40 weight percent aluminum, and 0–0.7 weight percent magnesium at a temperature within the miscibility loop of the zinc-aluminum phase diagram; quenching; reheating to 225°–325° C. and forming at this temperature. For additional improvement, the form is solution-treated, quenched and heat stabilized.

3,764,403
TEMPERING
James E. Neely, Jr., Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Nov. 10, 1971, Ser. No. 197,230
Int. Cl. C22f 1/00
U.S. Cl. 148—13.1 14 Claims

Using the heat of sublimation of a cooling medium to temper heated articles, particularly those of glass.

3,764,404
SURFACE DEPLETED NITRIDED ARTICLES
Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
No Drawing. Application Mar. 4, 1970, Ser. No. 16,594, now Patent No. 3,674,573, which is a continuation-in-part of application Ser. No. 755,662, Aug. 27, 1968, now Patent No. 3,549,429. Divided and this application Mar. 20, 1972, Ser. No. 236,215
Int. Cl. C22c 29/60; C23c 11/14
U.S. Cl. 148—31.5 1 Claim

Graded nitrided articles, surface modified in alloy composition wherein the surface zone consists of nitrided alloys consisting essentially of (a) one or more metals of the group columbium, tantalum, and vanadium; (b) zirconium and zirconium-titanium mixtures, and (c) one or both metals of the group molybdenum and tungsten. A minor portion of the nitrogen may be replaced by oxygen or boron. Nitrided materials prepared from homogeneous alloys are also included. The materials are characterized by excellent wear and abrasion resistance.

3,764,405
NITRIDED-OXIDIZED/BORONIZED MATERIALS
John J. Rausch, Antioch, and Ray J. Van Thyne, Oak Lawn, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
No Drawing. Application Mar. 4, 1970, Ser. No. 16,595, now Patent No. 3,674,574, which is a continuation-in-part of application Ser. No. 755,658, Aug. 27, 1968, now Patent No. 3,549,427. Divided and this application Mar. 20, 1972, Ser. No. 236,216
Int. Cl. C22c 29/00; C23c 11/14
U.S. Cl. 148—31.5 2 Claims

Graded nitrided articles, surface modified in alloy composition wherein the surface zone consists of nitrided alloys consisting essentially of (A) one or more metals of

the group columbium, tantalum, and vanadium; (B) titanium; and (C) one or both metals of the group molybdenum and tungsten. A minor portion of the nitrogen may be replaced by oxygen or boron. Nitrided materials prepared from homogeneous alloys are also included. The materials are characterized by excellent wear and abrasion resistance.

3,764,406

HOT-WORKING METHOD OF PRODUCING CUBE-ON-EDGE ORIENTED SILICON-IRON FROM CAST SLABS

Martin F. Littmann, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 4, 1971, Ser. No. 195,553
Int. Cl. H01f 1/04
U.S. Cl. 148—111 8 Claims

A process for the production of cube-on-edge silicon-iron sheet stock having uniformly good magnetic properties, comprising melting, refining, casting into slabs, hot reducing to hot rolled thin band, removing the hot mill scale, cold reducing to final thickness in one or more stages, decarburizing and recrystallizing in a wet hydrogen anneal, coating with a separator and annealing in hydrogen above about 1100° C. The cast slabs are initially hot reduced at least 5% at a temperature of 750° to 1250° C., then heated above 1350° C. and hot rolled to a thickness of 2.5 mm. or less. The initial hot reduction produces a structure which prevents excessive grain growth during the subsequent heating and hot rolling steps.

3,764,407

METHOD FOR PRODUCING A MONO-DIRECTIONAL SILICON STEEL SHEET

Hiroshi Hirano, Nishinomiya, Kiyoshi Yoshida, Kakogawa, and Nobutaro Kusuoka, Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

Continuation-in-part of abandoned application Ser. No. 817,485, Apr. 18, 1969. This application Feb. 9, 1972, Ser. No. 224,853
Claims priority, application Japan, Apr. 24, 1968, 43/27,582
Int. Cl. H01f 1/04
U.S. Cl. 148—112 2 Claims

A mono-directional silicon steel sheet having excellent electromagnetic characteristic is produced by using a silicon steel containing 2–4% of Si and small amount of Al, Ti, Zr or Ta or at least two of Al, Ti, Zr and Ta and subjecting the steel sheet to nitriding treatment at 450°–750° C. before a final annealing.

3,764,408

METHOD OF OBTAINING GALLIUM ALUMINUM ARSENIDE FOR AN ELECTROLUMINESCENT DIODE

Marc Mahieu, Caen, Elie Andre, Herouville-Saint-Clair, and Jean-Marc Le Duc, Caen, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1972, Ser. No. 251,009
Claims priority, application France, May 12, 1971, 7117119
Int. Cl. H01l 7/40
U.S. Cl. 148—171 4 Claims

A method of obtaining an epitaxial layer for an electroluminescent diode from a solution of arsenic in a melt of gallium and aluminum which is contacted with a substrate of gallium arsenide prior to cooling.

The method is characterized in that the weight percentage C_L of the aluminum of the melt relative to the gallium which is present in excess to the composition gallium arsenide is 0.05 to 0.8% and that during the contact the temperature T of the melt lies within a range of 6° C. around the value which is given by the following equation:

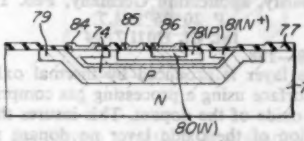
$$T \text{ in } ^\circ\text{C.} = 884 + (3200 \text{ Log } (C_L + 0.7))^{0.7575}$$

3,764,409

METHOD FOR FABRICATING A SEMICONDUCTOR COMPONENT FOR A SEMICONDUCTOR CIRCUIT

Masayoshi Nomura, Kokubunji-shi, Minoru Nagata, Kodaira-shi, and Hiroji Saida, Hachioji-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 29, 1969, Ser. No. 861,921
Claims priority, application Japan, Sept. 30, 1968, 43/70,127, 43/70,128; Feb. 17, 1969, 44/11,043; Feb. 26, 1969, 44/13,893; Mar. 22, 1969, 44/21,254; Mar. 27, 1969, 44/22,690; Mar. 31, 1969, 44/23,793
Int. Cl. H01l 7/36, 7/50, 19/00
U.S. Cl. 148—175 21 Claims



A silicon substrate of one conductivity type covered with a silicon nitride masking layer having an aperture is vapor-etched to have a hollow part therein and then heat treated in a mixture gas of HCl, $SiCl_4$, H_2 and one active impurity with a second conductivity type opposite to that of the substrate, so that a silicon epitaxial layer of the second conductivity type is epitaxially grown only on the surface of the hollow part in such a manner to refill the hollow part, thereby making the silicon epitaxial layer operable as a resistance element in the substrate with a pn junction formed therein according to this method.

3,764,410

METHOD OF MAKING ULTRA-FINE GEOMETRY PLANAR SEMICONDUCTOR DEVICES

Robert G. Hays, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 13, 1972, Ser. No. 234,200
Int. Cl. H01l 7/34
U.S. Cl. 148—187 10 Claims

A method of making ultra-fine geometry planar-type semiconductor devices on a semiconductor substrate of one conductivity type through using ultra-fine shaped areas of dopant material to provide semiconductor regions of an opposite conductivity type and then using access windows formed by removing the dopant material to provide another semiconductor region of the one conductivity type. The dopant material can be either of P-type or N-type conductivity and is formed into an ultra-fine geometry through using silicon oxide as a mask in a double etching step.

3,764,411

GLASS MELT-THROUGH DIFFUSIONS

Dale M. Brown, Schenectady, N.Y., assignor to General Electric Company

Filed June 23, 1970, Ser. No. 49,073
Int. Cl. H01l 7/46
U.S. Cl. 148—188 5 Claims

A process for diffusing impurity dopants into a semiconductor substrate from an impurity containing (doped) glass film, and in particular through an intermediate undoped insulating glass film, such as an oxide of the semiconductor substrate is described. In one embodiment, diffusion of boron atoms into a silicon substrate is described as comprising the steps of providing a boron trioxide doped silicon dioxide glass containing between approximately 20 and 50 molar percent of boron trioxide over a silicon dioxide layer overlying a silicon substrate and heating the substrate to cause the doped glass to undergo an abrupt pseudo change in state from a highly viscous glassy state to a low viscosity flowable glassy state and

to dissolve the adjacent undoped glass as the boron trioxide melts—through the undoped glass toward the surface of the silicon substrate whereupon free boron atoms diffuse into the substrate.

3,764,412

METHOD OF DOPING A SILICON CRYSTAL BY INDIFFUSING BORON OR PHOSPHORUS FROM A LAYER PRODUCED ON THE SILICON SURFACE

Wolfgang Müller, Vaterstetten, and Joachim Dathe, Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 12, 1971, Ser. No. 114,760
Claims priority, application Germany, Feb. 16, 1970, P 20 06 994.7
Int. Cl. H01l *7/34*
U.S. Cl. 148—188 4 Claims

The oxide layer is produced by thermal oxidation of the silicon surface using a processing gas comprising oxygen and an oxide of the dopant. This insures that during the production of the oxide layer no dopant penetrates into the semiconductor. Diffusion is carried out by a subsequently executed thermal process.

3,764,413

METHOD OF PRODUCING INSULATED-GATE FIELD-EFFECT TRANSISTORS

Katsunobu Kakizaki, Osamu Kurakami, and Yasukazu Inoue, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 23, 1971, Ser. No. 201,334
Claims priority, application Japan, Nov. 25, 1970, 45/103,932; Apr. 17, 1971, 46/24,668
Int. Cl. H01l *7/36, 11/00*
U.S. Cl. 148—188 4 Claims

A method is disclosed for fabricating an insulated-gate field-effect transistor. In the method, a window is formed in an insulating film formed on a substrate over the gate, source and drain regions which are to be formed. A semiconductor layer of a conductivity type opposite to that of the substrate is deposited over the insulating film and the exposed portion of the substrate defined by the window. The semiconductor layer is then selectively removed to expose the substrate at the gate region after which a second insulating film is formed over the remaining semiconductor layer and the exposed substrate surface at the intended gate region.

3,764,414

OPEN TUBE DIFFUSION IN III–V COMPOUNDS

Joseph M. Blum, Yorktown Heights, and Kwang K. Shih, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1972, Ser. No. 249,197
Int. Cl. H01l *7/44*
U.S. Cl. 148—189 8 Claims

An open tube process is used for Zn diffusion in III–V compounds coated with SiO_2 films to form p-n junctions. Electroluminescent diodes made by this method have high brightness with no etching of the p-n junction surface required.

3,764,415

METHOD OF MANUFACTURING A SEMICONDUCTOR CAPACITANCE DIODE

Gerhard Raabe, 2 Willinghusen, near Hamburg, Wiesenweg 5, Germany; Dieter Eckstein, 2 Hamburg 61, Rugierweg 29A, Germany; Heinz Sauermann, 2 Hamburg 54, Flasseheide 34, Germany; and Gerhard Winkler, 2 Schenefeld, Stuckweg 7, Germany

Filed Jan. 31, 1972, Ser. No. 222,156
Claims priority, application Germany, Feb. 2, 1971, P 21 04 752.9
Int. Cl. H01l *7/36, 7/44*
U.S. Cl. 148—191 18 Claims

A method of manufacturing a semiconductor capacitance diode in which a large capacity variation and an exponential variation of the capacity-voltage characteristic are obtained by the following manufacturing steps:

(1) No, one or several ever lower ohmic layers of the same conductivity type are provided on the high-ohmic layer on a low-ohmic substrate.
(2) By a suitable thermal treatment, the step-like doping profile resulting from the provided layer is rounded off by out-diffusion.
(3) Prior to providing the p-n junction in the last layer, at least one out-diffusion of a doping material causing the same conductivity type is carried out, as a result of which the conductivity is further increased.

3,764,416

LOW ENERGY PROPELLANT PRODUCING ESSENTIALLY NON-REACTIVE GASEOUS EXHAUST PRODUCTS

Edward Costa, Brooklyn, N.Y., and Robert Lantz, Chester, and William O. Seals, Budd Lake, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed May 13, 1971, Ser. No. 143,275
Int. Cl. C06b *3/02*
U.S. Cl. 149—18 8 Claims

A new low energy, double base, composite propellant composition for use as a gas generator containing conventional double base components coupled with certain acetate ester plasticizer, aryl hydroxide stabilizers, heterocyclic nitramine crystalline explosive filler, modifiers and carbon black, which together produce a low pressure, mesa burning rate curve and essentially nonreactive gaseous exhaust products.

3,764,417

COMPOSITE PROPELLANT INCLUDING GEM-NF_2-ALKYL CARBORANE

William E. Hill and Lew R. Beason, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Aug. 5, 1969, Ser. No. 851,138
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.2 SS 5 Claims

Composite propellants with very high burning rates (e.g., burning rates in the arrange of 4 to 20 inches/second) result when derivatives of carborane (e.g., alkylcarboranes or geminal NF carboranes) are incorporated into the propellant mixture of this invention. Propellants of this invention, which are constituted of a polybutadiene binder (hydroxy-terminated or carboxy-terminated) an akylcarborane ballistic modifier (e.g., n-butylcarborane, isobutylcarborane, or n-hexylcarborane), a siloxanyl- or silylcarboranes [e.g., bis(pentamethyldisiloxanyl)-metacarborane, 1-n-butyl-2-trimethyl-silylcarborane], or a geminal NF carborane ballistic modifier, ammonium perchlorate oxidizer, metal additive of aluminum powder, processing aid (e.g., lecithin, hexane, etc.), and a curing agent selected from a diaziridine or a triaziridine and diisocyanate, burn at approximately four times the burning rate of a control propellant containing no alkylcarborane ballistic modifier or geminal NF carborane ballistic modifier.

3,764,418

ADVANCED SOLID PROPELLANT FOR ANTITANK PROPULSION SUBSYSTEMS

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 23, 1972, Ser. No. 238,704
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.91 3 Claims

A novel propellant composition for rocket motors in which the propellant composition comprises a binder such as acrylate-acrylic acid or functionally terminated polybutadienes, nitroglycerine, HMX(cyclotetramethylenetetranitroamine), ammonium perchlorate, carbon black, and a crosslinking agent.

3,764,419
METHOD OF MAKING A BLASTING AGENT HAVING VARIABLE DENSITY

Harold W. Sheeran, Spokane, and Marcel H. Oriard, Marshall, Wash. (both % Box 33, Marshall, Wash. 99020)

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,198
Int. Cl. C06b 1/04
U.S. Cl. 149—21 1 Claim

An elastomeric filamentary tackifying composition having variable cohesive and adhesive properties capable of preventing migration of uniformly disposed particulate constituents having widely varying densities; one example of which comprises powdered polacrylamide, water and an alcohol in desired proportions. It is especially effective in combinations where the said constituents are a high density particulate blasting composition with a low density particulate bulking agent.

3,764,420
SUPPRESSION OF COMBUSTION INSTABILITY BY MEANS OF PBI FIBERS

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Jan. 6, 1971, Ser. No. 105,750
Int. Cl. C06d 5/06
U.S. Cl. 149—21 5 Claims

Suppression of combustion instability in solid propellant rocket motors is accomplished by means of polybenzimidazole fibers and other such fibrous, elastomeric materials which are thermally-stable and which retain their configuration under the combustion conditions encountered in an operating rocket motor.

The thermally-stable fibrous materials for suppressing combustion instability are incorporated into the solid propellant, and when the propellant burns, the thermally-stable fibrous materials are ejected into the rocket exhaust gas stream where they interfere with the flow pattern of the exhaust gases and damp out any unstable combustion.

3,764,421
METHOD OF MAKING NH_4NO_3-H_2O-FO COMPOSITION

Jared W. Clark, 1604 Loudon Heights Road, Charleston, W. Va. 25314

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,617
Int. Cl. C06b 1/04
U.S. Cl. 149—46 2 Claims

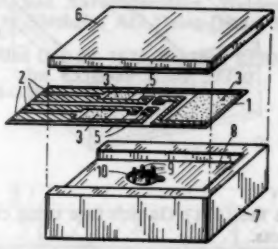
Improved blasting compositions are provided by adding water, in controlled amounts, to a prilled ANFO (mixture of prilled ammonium nitrate and fuel oil), aging the mixture until the contained prills can be crushed by pressing between the fingers and thereafter completing the mixing of the ingredients until a product is obtained in which a substantial amount of the prilled ammonium nitrate has been converted to finely-divided solids and the density of the resulting mixture is greater than the density of the prilled ANFO starting material.

3,764,422
METHOD OF PRODUCING THIN-LAYER ELECTRONIC ASSEMBLY

Hans Koritke and Roland Haft, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Original application May 29, 1969, Ser. No. 829,048. Divided and this application Oct. 2, 1970, Ser. No. 77,692
Claims priority, application Germany, May 31, 1968, P 17 65 511.7, P 17 66 499.2; Sept. 12, 1968, P 17 91 104.5; Nov. 18, 1968, P 18 09 559.5
Int. Cl. C23f 1/02
U.S. Cl. 156—3 5 Claims

Covers an improved thin layer electronic circuit assembly for receiving electrical components which includes a non-conductive flexible plastic foil support having a thin layer circuit adherent to said support, which circuit includes conductor tracks for receiving said electrical components and contact surfaces for connection with other

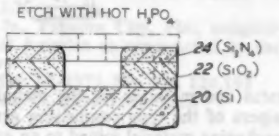


circuits. It also covers a method of preparing a plurality of said assemblies in a continuous manner by preparing a tape of said support and fixing thereon a plurality of said thin layer circuits in a continuous manner. The tape then is trimmed to provide the desired group of circuits.

3,764,423
REMOVAL OF DIELECTRIC LEDGES ON SEMICONDUCTORS

Victor Emerald Hauser, Jr., Palmerton, Pa., Peter Theodore Panousis, New Providence, N.J., and Vincent De Paul Wohlheiter, Allentown, Pa.; said Hauser and said Panousis assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., said Wohlheiter assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,905
Int. Cl. H01l 7/50
U.S. Cl. 156—3 10 Claims



Semiconductor articles having multiple-layer dielectric protective coverings are usually provided with openings through the protective coverings. Metallic contacts are made through the openings to the underlying semiconductor material. During the formation of the openings, a ledge often develops in the outer-most layer of dielectric material. The troublesome ledge is removed by subjecting the outer-most material to an etchant which etches away substantially one-half the original thickness of the outer-most material, but at the same time, etches away the entire ledge since the etching action occurs from the underside of the ledge as well as the topside of the ledge.

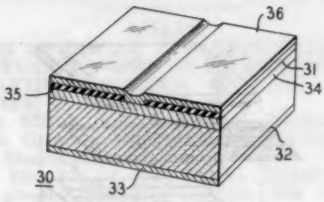
3,764,424
FABRICATION OF GALLIUM ARSENIDE DEVICES

Augustus Julius Sayko, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 3, 1971, Ser. No. 139,773
Int. Cl. H01l 7/00
U.S. Cl. 156—17 6 Claims

A process is described for the fabrication of gallium arsenide devices in which chemical polishing is carried out on the (111) Ga-rich surface using a pH adjusted

peroxide polishing solution. This polishing agent produces particularly high quality surfaces which is difficult



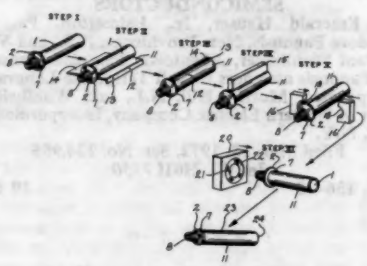
to achieve on the (111) Ga-rich face using conventional polishing agents.

3,764,425

APPARATUS AND METHOD FOR THE MANUFACTURE OF TUBULAR CONTAINERS

Robert O. Neff, Milwaukee, Kenneth V. Morrison, Brookfield, and William D. Groechel, Whitefish Bay, Wis., assignors to Milprint, Inc., Milwaukee, Wis.

Filed Jan. 10, 1972, Ser. No. 216,502
Int. Cl. B29c *27/02*
U.S. Cl. 156—69 **12 Claims**



Apparatus and methods for the manufacture of tubular containers of the type comprising a tubular body of flexible packaging material joined to an end closure member wherein the end closure member is first supported on a mandrel, a flat sheet of the body material is fed to the mandrel and folded into a tube around the end closure member and thereafter joined thereto to form a completed container. As a further feature, the apparatus may include means for thermally reflowing a portion of the end closure member if it is of a construction which includes a radially-extending flange that is thermally reflowable to the final position in which it is disposed axially of the container body.

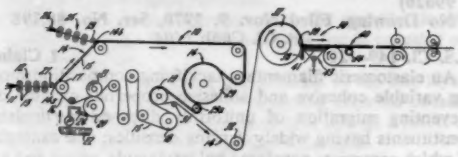
3,764,426

HIGH-LOFT, NONWOVEN FABRIC HAVING RANDOMLY DIRECTED FIBERS THEREIN, AND METHOD OF PRODUCING THE SAME

Robert J. Peerenboom, Little Chute, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 27, 1971, Ser. No. 212,167
Int. Cl. D04h *3/00, 11/00*
U.S. Cl. 156—72 **15 Claims**

A high-loft, nonwoven fabric and a method for producing it that comprises advancing a surface having an open pattern of tacky adhesive, bonding a plurality of flexible elements in the adhesive randomly at least partially in the machine and cross directions, preparing a web of other flexible elements extending substantially in the machine direction, bonding the web in the adhesive, and at least partially consolidating the adhesive into a backing layer



while looping the machine direction elements outwardly from the adhesive backing layer.

3,764,427

VEIN STRIPPING INSTRUMENT

Harry G. Reimels, Braintree, Mass., assignor to Codman & Shurtleff, Inc.

Original application Feb. 19, 1970, Ser. No. 12,795, now Patent No. 3,659,606. Divided and this application Jan. 28, 1972, Ser. No. 221,834
Int. Cl. B29c *27/08*
U.S. Cl. 156—73 **11 Claims**

A surgical vein stripping instrument is made by providing a length of cable formed from a monofilament of axially oriented synthetic thermoplastic material and ultrasonically welding a tubular plastic cap to each end of the cable. Each cap is smoothly rounded on its end to permit free passage of the cable through a vein and each cap is adapted to be secured to both an auxiliary bullet-shaped tip and a handle for aiding the doctor in the removal of the vein.

3,764,428

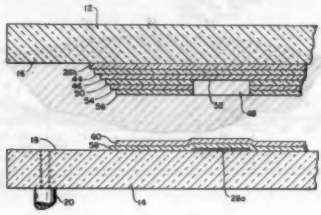
METHOD OF FOAMING FIBROUS FLEECE

Keiji Oshima, Toyonaka, and Yozo Ito and Setsuo Suzuki, Yokohama, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 587,391, Oct. 18, 1966. This application July 15, 1970, Ser. No. 55,293
Int. Cl. B32b *5/20, 31/20*
U.S. Cl. 156—78 **2 Claims**

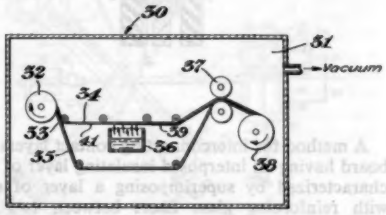
A process and structural foamed product produced therefrom in which a powdery composition comprising a thermosetting resin and a foaming agent, which upon heating generates a gas, is sprinkled all over a layer of fibrous fleece, the fibers of which are unbonded to one another. The treated layers are preformed (compressed) at a temperature below the foaming temperature and the curing temperature of the resin. The preformed product is then heated to foam and cure the resin, and simultaneously to expand the fleece together with the resin employed.

3,764,429
METHOD OF FORMING CAVITIES IN A PLASMA DISPLAY PANEL
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Aug. 30, 1971, Ser. No. 175,878
Int. Cl. B32b *31/26*; B44d *1/14*; C04b *37/04*
U.S. Cl. 156—89 8 Claims



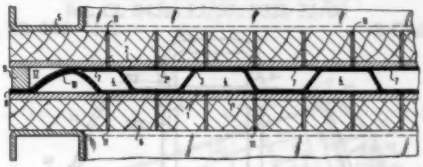
A method of forming cavities in a plasma display panel having front and rear substrates with the cavities formed therebetween. In one embodiment, layers of glass are silk-screened onto one of the substrates, omitting glass from those areas where cavities are to be formed. The number of layers of glass to be silk-screened depends upon the depth of the cavities desired. In another embodiment, the desired cavities are cut out of a glass transfer tape and secured to one of the substrates. Similar tapes having the cut-out portions in registration with one another are secured to one another to obtain the desired cavity depth. After the desired cavity depth is obtained, the substrate with the required number of layers of glass thereon is fired in an oven.

3,764,430
METHOD FOR MAKING A METALLIZED BARRIER STRUCTURE OR FILM
Walter J. Schrenk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 29, 1970, Ser. No. 85,079
Int. Cl. B32b *31/00*
U.S. Cl. 156—150 22 Claims



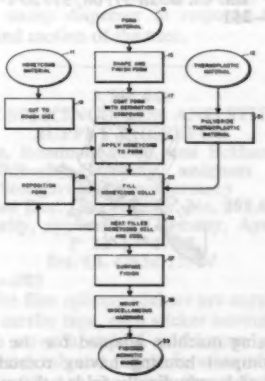
A process for making packaging films and other structures having excellent gas and water vapor barrier characteristics. This process utilizes a multilayered film which is first separated into two webs of one or more layers. One inner layer surface of a web is then metallized. A composite metallized thermoplastic structure results from relamination after metallization. An important feature of this process is the selection of the two inner layers adjacent to the contacting interfaces of the webs from thermoplastic compositions which characteristically adhere poorly to each other but individually adhere well to metal.

3,764,431
METHOD AND APPARATUS FOR MAKING CHANNELLED SHEETS FROM DEFORMABLE MATERIALS
Heinrich Krämer, Josef Butz, Richard Müller, Ludwig Thoma, and Johann Pöllmann, Weiden, Hans Zielbauer, Ullersricht, and Xaver Bernklau, Weiden, Germany, assignors to Flachglas AG Delog-Detag, Fuerth, Germany
Filed Oct. 22, 1970, Ser. No. 83,038
Int. Cl. B29d *23/02*, *31/20*
U.S. Cl. 156—156 5 Claims



A method of making channelled sheets from deformable materials includes the steps of forming a laminate of webs with expandable shaping devices between the webs, and expanding the devices to urge outer webs against smooth surfaces and to urge a middle web or webs to adopt a channel wall configuration, with the edges of at least the outer webs being restrained against movement transverse to the channels. The outer webs can be pretensioned, and the expandable shaping devices can be restrained during expansion and can also be pretensioned.

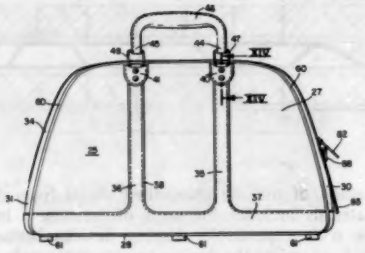
3,764,432
METHOD OF MAKING AN ACOUSTIC WINDOW INCLUDING FILLING HONEYCOMB CELLS INDIVIDUALLY
Jesse L. Bealor, Jr., Panama City, Fla., assignor to the United States of America as represented by the Secretary of the Navy
Filed Mar. 15, 1971, Ser. No. 124,191
Int. Cl. B29d *3/02*, *9/08*
U.S. Cl. 156—242 2 Claims



Disclosed is an improved acoustic window or lens comprising a metallic core element and a thermoplastic filler which is shaped to conform to complex curves. A method of manufacture is also disclosed, wherein voids in said

core are filled with particles of thermoplastic and then heated to melt the particles into a fluid which hardens to fill the voids.

3,764,433
METHOD OF MAKING A UTILITY BAG
Marvin Schneider, Bryn Mawr, Pa., assignor to Rapid-American Corporation, Clayton, Del.
Original application Oct. 21, 1968, Ser. No. 769,313, now Patent No. 3,578,115. Divided and this application June 15, 1970, Ser. No. 57,416
Int. Cl. B29c *5/04, 17/10, 24/00*
U.S. Cl. 156—245 8 Claims



A general utility bag is provided, major components of which are rotationally cast or molded, as an integral monolithic unit, with bottom and closure units being secured thereto by radio frequency heat sealing and wherein other heat sealing operations may be of the radio frequency type. Detail, trim and graining along with simulated stitching is provided as part of the integral molding or casting operation to give the general appearance of a bag constructed of multiple components. Handles are then attached to the bag.

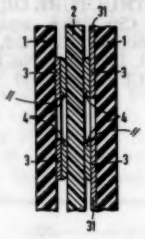
3,764,434
BAG-FORMING MACHINE
Orville J. Bridenstine, Caney, Kans., assignor to Phillips Petroleum Company
Filed Nov. 29, 1968, Ser. No. 779,700
Int. Cl. B32b *31/08, 31/20*
U.S. Cl. 156—251 4 Claims

A bag-forming machine adapted for use in the home employs a compact housing having rotatably mounted therein a roll of longitudinally folded thermoplasic sheet material. A sealing station is disposed beneath the roll and utilizes a stationary anvil surface on which a resistance wire is mounted. A pivotally mounted, manually actuated sealing bar urges a selected transverse band of the film plies over the wire until a desired sealing and cutting action has been effected.

3,764,435
METHOD OF EMPLACING INSIGNIA IN OBJECTS
Victor E. Dworak, Huntington Beach, Calif., assignor to AMF Incorporated
Filed May 6, 1971, Ser. No. 140,870
Int. Cl. A63b *43/00;* B29c *27/12*
U.S. Cl. 156—257 1 Claim

The method of decorating an object comprising the steps of providing a recess in a finished object, emplacing a marking plug of variable height in said recess, and conforming the upper surface of said plug to the outer surface of the object.

3,764,436
METHOD FOR INTERCONNECTING CONTACT LAYERS OF A CIRCUIT BOARD
Werner Schmidt and Hubert Zukier, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Aug. 18, 1971, Ser. No. 172,676
Claims priority, application Germany, Aug. 24, 1970, P 20 41 949.2
Int. Cl. H05k *3/00*
U.S. Cl. 156—288 10 Claims

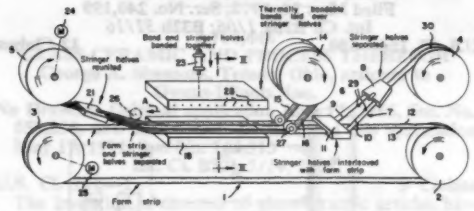


A method for interconnecting contact layers of a circuit board having an interposed insulating layer of epoxy resin characterized by superimposing a layer of epoxy resin with reinforcing glass fibers between two conducting layers carried on layers of insulating material, each of the conducting layers including at least one contact point provided with a coating of bonding metal, heating the stack to a temperature above the curing temperature of the epoxy resin and below the melting point of the bonding metal so the resin becomes liquid and begins to jell, and then applying pressure to the stack to press the contact points against the jelling epoxy resin to force it and its reinforcing glass fibers from between the points to obtain engagement of the surfaces of the coatings of bonding metal which coatings of bonding metal is due to the temperature and pressure conditions form an integral bond between the contact point to form a connection between its separated conducting layers.

3,764,437
METHOD OF MAKING WATERPROOF SLIDE-FASTENER STRINGER

Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Filed Aug. 14, 1970, Ser. No. 63,890
Int. Cl. A44b *19/32*; B32b *31/00*
U.S. Cl. 156—306 3 Claims

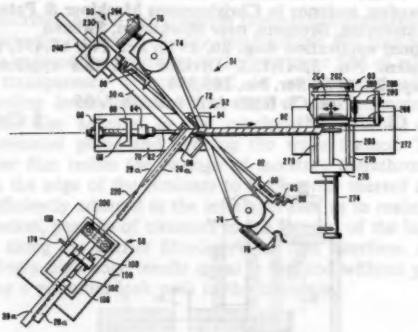

Thermally bondable bands laid over stringer halves
Bond and stringer halves bonded together
Stringer halves reunited
Stringer halves separated
Form strip and stringer halves separated
Stringer halves interleaved with form strip
Form strip

The two halves of a slide-fastener stringer are separated and each half is meshed with one side of a heat-resistant form strip consisting of an endless base strip carrying on each of its edges an endless coil meshable with the stringer halves. A thermally bondable elastomeric band is laid over each half and bonded thereto in a heated press. Then the halves are detached from the form strip and again reunited. The pressing operation also forms a tight sealing lip on the edge of the waterproofing band.

3,764,438
METHOD AND APPARATUS FOR MANUFACTURING LAMINATED TUBE STRUCTURE

Joseph A. Voss, Denver, Colo., and Carl W. Johnson, Neenah, Wis.; said Voss assignor to Kimberly-Clark Corporation, Neenah, Wis.

Original application May 3, 1968, Ser. No. 726,522, now Patent No. 3,581,744. Divided and this application July 9, 1970, Ser. No. 61,010
Int. Cl. B31c *31/00*
U.S. Cl. 156—425 11 Claims

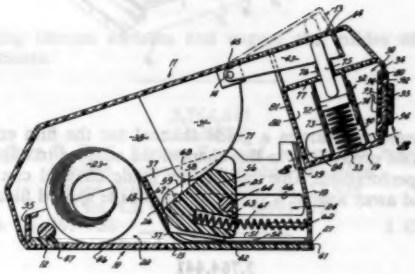


Three strips of paper are supplied, under constant, low tension, to the fixed mandrel of a helical tube winding apparatus. A strip supply mechanism senses strip tension and, by means of a mechanical feedback arrangement, regulates the tension. The inner, mandrel-engaging strip is provided with a lubricating medium in the form of lycopodium powder supplied to the inner strip in metered fashion. Liquid adhesive is applied to all surfaces of the strip forming the intermediate ply by an adhesive-applying unit including a pair of opposed, rounded doctor surfaces for removing excess adhesive from the faces of the strip and equalizing the thicknesses of the adhesive layers on the faces. The maintenance of uniform, equally thick layers of adhesive on both faces of the strip during its travel to the mandrel from the doctor surfaces is enhanced by having the strip move through a 180° twist.

3,764,439
STAMP DISPENSER

George K. Rome, 704 Sherburn Lane, Apt. B–1, Louisville, Ky. 40207

Filed Oct. 15, 1971, Ser. No. 189,514
Int. Cl. B43m *13/00*; B32b *31/00*
U.S. Cl. 156—442 2 Claims



A novel stamp dispenser particularly adapted for use with postage stamps. The stamp dispenser is structured such that, after being placed on top an envelope and with a single downward hand motion of the user, the envelope is wetted with a water spray, a stamp is ejected from the mechanism and sheared from a supply roll inside the mechanism, and the stamp is pressed into place on the wetted area of the envelope. A primary handle adapted to telescope over a housing serves to eject the stamp, to shear it from the supply roll, and to press it onto the envelope, and a secondary handle adapted to telescope into the primary handle serves to actuate a pump that ejects the water spray. In sequence, the secondary handle is telescoped into the primary handle and the primary handle is then telescoped over the housing to carry out the functions of the stamp dispenser in response to the single downward hand motion of the user.

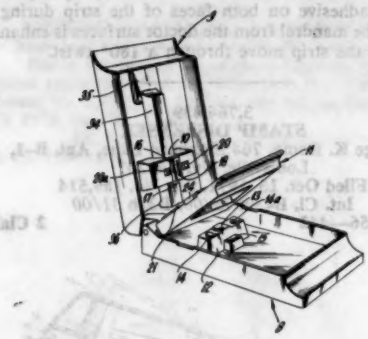
3,764,440
FILM SPLICING PRESS AND STICKER SUPPLY THEREFOR

Carl Schroter, Rommelshausen, and Eckhard Mulfinger, Stuttgart-Uhlbach, Germany, assignors to Heinrich Hermann, Stuttgart-Wangen, Germany

Filed Dec. 16, 1971, Ser. No. 208,691
Claims priority, application Germany, Apr. 10, 1971, P 21 17 495.8
Int. Cl. G03d *15/04*
U.S. Cl. 156—505 7 Claims

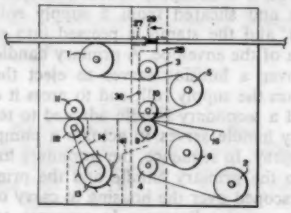
Self-adhesive film splicing stickers are supplied disposed in pairs on a carrier tape, each sticker having an uncoated separable tab at each end. A positioning perforation is provided on each tab and the perforation of the two tabs of one sticker differ in size, while the perforations of the respective tabs of the two members of a pair of stickers differ in shape. Together with the disposition of perforations in the body of the sticker corresponding to perforations in the film ends to be joined, the aforesaid perforations assure that the pair of stickers will be properly placed in a film splicing press, in which opposed ridge

structures on the hinged jaws of the press carry positioning bosses corresponding to the perforations of the sticker tab. A film guiding unit is hinged between the jaws of



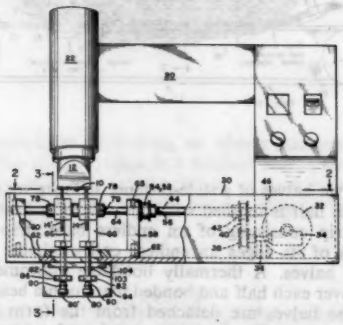
the press and carries a guide channel for the film ends. Bevelled projections in this channel are adapted to engage film perforations. One side of the guide channel can be moved away against a spring to release the spliced film.

3,764,441
LAMINATOR
Frederick O. Bley, Reston, Va., assignor to Optical and Electronic Research, Inc., Reston, Va.
Filed May 26, 1970, Ser. No. 40,517
Int. Cl. B32b *31/08, 31/20*
U.S. Cl. 156—555 **3 Claims**



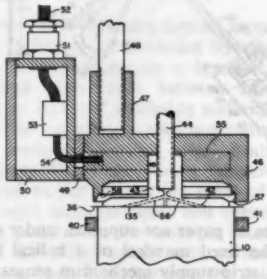
A laminator is disclosed which is designed to allow an object to be laminated between two sheets of transparent material. The laminator is provided with a pair of supply rolls, each designed to supply one sheet of transparent material. A pair of guide rollers are provided to guide the transparent material in its path through the laminator. A pair of heat drums are provided, with stationary heating elements, to heat the transparent material to a temperature at which it is capable of being fused with another sheet of transparent material to form a unitary structure. A pair of pressure rollers formed of silicone rubber provides pressure to cause the transparent material to fuse. A second pair of silicone rubber pressure rollers, one of which is driven, draws the laminated combination over a cooling fan and subsequently ejects the now unitary structure from the laminator. One pressure roller, of the first pair, is capable of limited movement to facilitate loading the laminator. An adjustable thermostat is provided to indicate when the heating elements have been raised to operating temperature and to provide proper operating temperature for laminate material of varying thickness. The heating elements per se are stationary, however, a rotatable shield is provided to minimize friction between the laminate material and the heating device as the laminate material passes by the heat source.

3,764,442
ULTRASONIC SEAMING APPARATUS
Frank Parry, Monroe, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.
Filed Mar. 31, 1972, Ser. No. 240,199
Int. Cl. B23k *1/06;* B32b *31/16*
U.S. Cl. 156—580 **12 Claims**



An ultrasonic seaming apparatus in which rotatable anvil disks driven in unison engage one side of a flexible workpiece whose other side is contacted by a resonant horn. Means are provided for independently mounting each anvil disk and adjusting the bias which urges each disk toward the horn. Also, the minimum gap between each anvil disk and the horn is selectively adjustable.

3,764,443
APPARATUS FOR HEAT SEALING A CLOSURE ON A PACKAGE COMPRISING A DIE WITH SLOPING SIDES
Od Wikar Christensson, Bromma, near Stockholm, Sweden, assignor to Christenssons Maskiner & Patenter Aktiebolag, Bromma, near Stockholm, Sweden
Original application Aug. 20, 1970, Ser. No. 65,491, now Patent No. 3,647,133. Divided and this application Sept. 24, 1971, Ser. No. 183,398
Int. Cl. B30b *15/34;* B65b *7/06*
U.S. Cl. 156—581 **2 Claims**



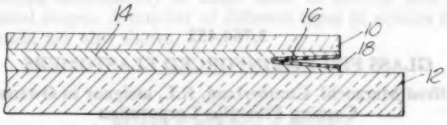
A package of polygonal cross-section having a thin end closure closing at least one end. The closure extends over

onto and is attached to the sides of the package. Air tightness is improved by attaching the closure such that the end of the package is bent inwardly at least at the corner, in somewhat the form of a frustrum pyramid. An apparatus for closing such a package comprises a heatable tool having inwardly sloping sides to press the end closure onto the edge of the package end and concurrently force the end into the frustrum pyramid shape.

3,764,444
GLASS-CERAMIC AND PROCESS THEREFOR
George A. Simmons, Toledo, Ohio, assignor to Owens-Illinois, Inc.
No Drawing. Original application June 17, 1966, Ser. No. 558,238, now abandoned. Divided and this application May 17, 1971, Ser. No. 144,313
Int. Cl. B32b *5/14, 7/02*
U.S. Cl. 161—1 9 Claims

The invention is directed to glass-ceramic articles having a glass-ceramic main body portion and at least one integral surface portion which differs from the body portion. The surface portion is either a glass or a glass ceramic having a lower coefficient of linear expansion than the body portion. Processes for manufacturing the glass-ceramic articles are also disclosed.

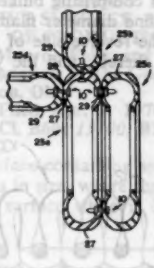
3,764,445
INTERLAYER STRESS REDUCTION IN LAMINATED TRANSPARENCIES
Jan B. Olson, Marina Del Rey, Calif., assignor to The Sierracin Corporation, Sylmar, Calif.
Continuation-in-part of abandoned application Ser. No. 790,219, Jan. 10, 1969. This application Feb. 2, 1971, Ser. No. 111,993
Int. Cl. B32b *3/02, 17/10*
U.S. Cl. 161—4 6 Claims



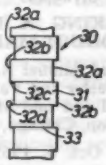
Described herein are coherent laminated transparencies wherein the incidence of edge delamination and chip pulling is reduced by providing in the interlayer film of which the transparency is comprised an unlaminated plane extending inwardly from the edge of the laminate, a barrier film adhered to the interlayer film lining the unlaminated plane and defining the walls thereof. The barrier film resists the passage of moisture therethrough from the edge of the laminate to the interior thereof and is sufficiently adhered to the interlayer film as to resist, in operation, passage of moisture to the interior of the laminate along the barrier film-interlayer film interface. Accordingly high edge tensile stress is reduced without providing a potential leak path in the laminate.

3,764,446
DISCARDED TIRE CARCASSES SECURED TOGETHER BY FASTENERS TO FORM A CHAIN OR MAT
Macklin F. Martin, 6015 Herzog St., Oakland, Calif. 94608
Filed Jan. 19, 1972, Ser. No. 218,936
Int. Cl. B32b *3/06, 7/08;* B61f *19/04*
U.S. Cl. 161—36 10 Claims

Discarded tire carcasses are utilized by forming them into chains, mats or structures built up by arranging the tires in contact with one another, crown to crown, side wall to side wall, or side wall to crown, and securing the carcasses together by fasteners which pierce the engaging carcass surfaces and engage the insides of the carcasses.



3,764,447
LABELS
Geoffrey E. Duff, Kirton, England, assignor to Norprint Limited, Boston, Lincolnshire, England
Filed Feb. 27, 1970, Ser. No. 14,938
Int. Cl. B65h *5/26;* G09f *3/02*
U.S. Cl. 161—38 1 Claim



A strip of labels is formed from a sheet of material having spaced longitudinal demarcation lines such as slits or cuts and similar regularly spaced transverse demarcation lines to define individual labels. The lines which define the side edges of at least one side have a regular indentation or are formed with a regular castellation. The preferred form includes a longitudinal demarcation line on each side which form a rectangular projection which is centered intermediate the length of each label, thereby leaving a recess of rectangular form which is centered in respect to the transverse demarcation lines. The labels are defined on either a single strip of material which, for example, may also include a backing sheet or on a whole sheet of material in which a plurality of rows of such labels are formed together and wherein the projections formed on a side of one of the rows interengages in the recess formed on the edges of the next adjacent row.

3,764,448
GLASS PILE FABRIC AND METHOD OF MAKING SAME
John L. Nisbet and Hubert C. Woodall, Jr., Winston-Salem, N.C., assignors to Carolina Narrow Fabric Company, Winston-Salem, N.C.
Continuation-in-part of application Ser. No. 858,796, Sept. 17, 1969, now Patent No. 3,654,056. This application Mar. 24, 1972, Ser. No. 237,803
Int. Cl. D03d *27/00*
U.S. Cl. 161—67 24 Claims

A glass pile fabric suitable for use as carpeting, upholstery and the like and characterized as being flame

retardant, non-irritating to skin contact, and having substantial dimensional stability and strength. In one embodiment, the fabric comprises a backing material of interlaced glass yarns, and pile loops penetrating the backing material and comprising bulked glass yarns consisting of extremely fine diameter filaments. An adhesive may be carried on the reverse side of the backing fabric to anchor the loops therein, and the yarns of the loops

may be finished with a resin bonded pigment. The pile fabric may be produced by a process which includes the steps of applying a resin bonded pigment finish to the bulked glass yarns, inserting loops of the finished yarns through the backing material to form a pile surface, applying an adhesive to the reverse side of the backing material to anchor the loops, and then applying a non-pigmented resin finish to the surface of the pile loops.

3,764,449

METHOD OF MAKING A POLYIMIDE AND LAMINATED PRODUCT MADE THEREFROM

Robert L. Copeland and Samuel A. Moorefield, Marion, Va., and David R. Beeler and Vance A. Chase, Poway, Calif.; said Copeland and said Moorefield assignors to Brunswick Corporation, Chicago, Ill.

No Drawing. Filed Oct. 6, 1969, Ser. No. 13,915

Int. Cl. C08J *1/14*

U.S. Cl. 161—88 **8 Claims**

A preformed polyimide having a void content of less than 5% which can be textile reinforced and which has great strength, even when exposed to temperatures upward of 500° F. A method for producing such preformed polyimide by carefully controlling the imidization.

3,764,450

ELASTIC FIBER FLEECE MATERIAL

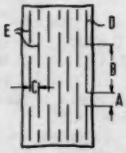
Guenter Horst Tesch, Fribourg, Switzerland, assignor to Breveteam, S.A., Fribourg, Switzerland

Filed Mar. 26, 1969, Ser. No. 810,564

Claims priority, application Switzerland, Mar. 26, 1968, 4,566/68

Int. Cl. B32b *5/02, 3/10*

U.S. Cl. 161—109 **5 Claims**



A fleece fabric material provided with closed slits which improve its flexibility, feel and stretchability, the length of the slits not exceeding 6.5 mm.

3,764,451

AIR-FORMED ADHESIVELY SUPPLEMENTED, HYDROGEN-BONDED WEBS

Charles E. Dunning, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of application Ser. No. 882,257, Dec. 4, 1969, now Patent No. 3,692,622. This application May 20, 1971, Ser. No. 145,449

Int. Cl. D21h *5/26*; D04h *1/04*

U.S. Cl. 161—124 **5 Claims**

Lightweight cellulosic products characterized by a desirable combination of strength, absorbency and tactile properties are formed by air laying a web of cellulosic fibers, and, thereafter, uniting the fibers into a coherent structure by bonding them together at regularly patterned areas of the web with adhesively supplemented hydrogen bonds. The resulting products need not be creped to develop improved tactile characteristics and may be advantageously used as facial wipes, toweling and the like.

3,764,452

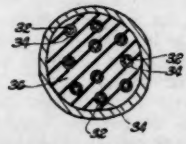
GLASS FIBER-REINFORCED ELASTOMERS

Alfred Marzochi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

Filed Dec. 13, 1971, Ser. No. 209,878

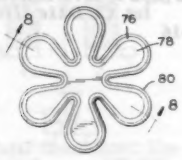
Int. Cl. B29h *17/28*; B32b *25/02*; D02g *3/00*

U.S. Cl. 161—140 **26 Claims**



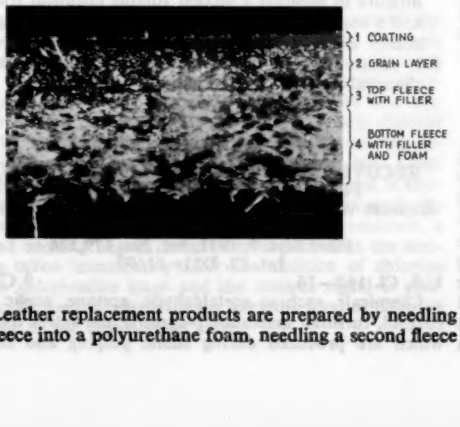
The improvement in the bonding relationship between glass fibers and elastomeric materials in the manufacture of glass fiber-reinforced elastomeric products wherein bundles of glass fibers are first coated with an elastomer compatible material and then are coated with a cellulose xanthate which prevents the elastomer compatible material from being dislodged from the glass fiber surfaces, which can either be removed or chemically modified to aid in the integration of the glass fiber bundle with the elastomeric material with which it is combined.

3,764,453
THERMOPLASTIC FILM ARTICLES
Richard L. Ropiequet, 255 SW. Harrison, and Margaret J. Montag, 3625 SW. Dosch Road, both of Portland, Oreg. 97201
Application July 23, 1969, Ser. No. 852,963, now Patent No. 3,654,017, which is a continuation-in-part of abandoned application Ser. No. 702,426, Feb. 1, 1968. Divided and this application Aug. 26, 1971, Ser. No. 175,086
Int. Cl. B32b *3/02, 7/14*
U.S. Cl. 161—147 19 Claims



A process is disclosed for making articles of ornamental or unusual appearances by cutting and heating operations performed on a plurality of layers of thermoplastic film material which has been stretched, preferably in two directions at right angles to each other, during manufacture, so as to fuse the layers of material together at least at their edges and in most cases cause contraction of the films in directions parallel to their faces and expansion in a direction perpendicular thereto. A particularly effective procedure is to form an elongated composite roll or bundle of the film material or rods of thermoplastic material or both and to then slice the resulting structure transversely into wafers. These wafers may be heated differentially to cause them to deform into unusual shapes. A number of different types of articles thus made are also shown.

3,764,454
SUPPLE FIBROUS SHEET
Lawrence W. Healy, Johnsonville, S.C., and Wu Lan Wang, Newark, and Joseph I. Gross, Short Hills, N.J., assignors to Tenneco Chemicals, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 719,219, Apr. 5, 1968. This application Nov. 13, 1970, Ser. No. 89,223
Int. Cl. B32b *3/26, 7/02, 7/08*
U.S. Cl. 161—159 15 Claims



Leather replacement products are prepared by needling a fleece into a polyurethane foam, needling a second fleece onto the resulting web and depositing a polyurethane elastomer into the void spaces and interstices of the resulting products.

3,764,455
REFLECTIVE SURFACE AND METHOD OF PRODUCTION
John A. Lovell, Monroe Falls, and Donald V. Hillegass, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Apr. 1, 1970, Ser. No. 24,886
Int. Cl. B60c *13/00;* B32d *5/16*
U.S. Cl. 161—162 3 Claims

A reflective surface containing spherical glass beads of 50 to 300 microns in size, where the beads are preferably sprinkled on the surface while it is still in an adhesive state.

3,764,456
POLYMERIC HIGH PERFORMANCE COMPOSITES
Raymond T. Woodhams, Toronto, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
No Drawing. Filed Sept. 28, 1970, Ser. No. 76,239
Claims priority, application Great Britain, Oct. 2, 1969, 48,547/69
Int. Cl. B32b *5/16*
U.S. Cl. 161—171 20 Claims

A high performance composite of polymer and platelet reinforcing material, the platelets being of mica and of aspect ratio at least about 30. The platelets are of diameter within the range 1 to 1000 microns and 0.001 to 100 microns thickness, and constitute about 10 up to about 75% by vol. of the composite. The mica platelets are prepared and selected to be of high aspect ratio and strength. Techniques for separating into platelets, encapsulating the platelets with polymer, and for aligning the platelets in the matrix are described. Stress-strain properties of the composite are very good (particularly in the plane of alignment) indicating application as a structural material.

3,764,457
TRANSPARENT, IMPACT-RESISTANT POLY(CARBONATE-URETHANE) LAMINATES
Wen-Hsuan Chang, Gibsonia, Pa., and Andrew J. Kaman, Norton, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Aug. 2, 1971, Ser. No. 168,498
Int. Cl. B32b *17/10, 27/40*
U.S. Cl. 161—183 31 Claims

Laminates for use as automobile windshields or other safety glass applications comprising a polycarbonate urethane and one or more sheets of glass are provided. The urethane is preferably a thermoplastic material formed from an aliphatic polycarbonate, a cycloaliphatic diisocyanate and a monomeric aliphatic diol.

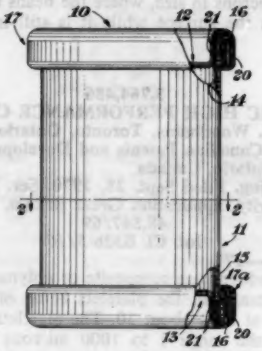
3,764,458
IONIC ALPHA-OLEFIN COPOLYMER ADHESIVE LAMINATE
Kenneth D. Ziegel, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 11, 1971, Ser. No. 123,465
Int. Cl. B32b *15/08, 17/10, 31/12*
U.S. Cl. 161—190 23 Claims

A laminated structure having good peel strength and using a simple one-coat adhesive composition, said laminated structure consisting essentially of an elastomeric copolymer of at least one C_2–C_8 α-olefin adhered to a substrate by a composition consisting essentially of

(1) an ionic copolymer of ethylene and a C_3–C_8 α,β-unsaturated carboxylic acid containing about 3–25 weight percent of said acid units and

(2) about 0.05–0.60 equivalents of a polyvalent metal compound based on the acid groups in the ionic copolymer.

3,764,459
SELF-DESTRUCTING METAL STRUCTURES
Percy F. George, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Original application Jan. 21, 1970, Ser. No. 4,613. Divided and this application May 20, 1971, Ser. No. 145,299
Int. Cl. B32b *15/04*
U.S. Cl. 161—225 6 Claims



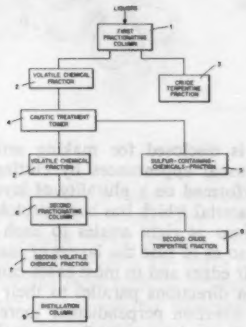
A metal laminate is provided which will deteriorate after the interior of the laminate is contacted by moisture. Self-destructing containers are fabricated of this structural laminate. The laminate includes at least two layers of dissimilar metals which are electronically connected. One of the metal layers is an aluminum-based metal and the other layer is a metal anodic to the aluminum-based metal, such as a magnesium-based metal. Positioned between the metal layers is at least one layer of an electrolyte-forming composition capable of establishing ionic communication between the metal layers when the composition is contacted with moisture. A preferred electrolyte-forming composition is an inorganic salt containing an alkali metal or an alkaline earth metal, such as sodium chloride. When the electrolyte-forming composition is contacted by sufficient moisture to provide ionic conduction between the metal layers, a galvanic cell is formed having the unique property of simultaneously deteriorating at both the anode and cathode.

3,764,460
PROCESS OF DEINKING WASTE PAPER MATERIALS
Sho Miyamoto, Tokyo, Sachihiko Kurihara, Handa, and Shinichi Nishikawa, Tokyo, Japan, assignors to Japan Maize Products Co., Ltd., Tokyo, Japan
No Drawing. Filed Mar. 27, 1970, Ser. No. 23,475
Claims priority, application Japan, Apr. 1, 1969, 44/24,364; Apr. 23, 1969, 44/31,024; Sept. 22, 1969, 44/74,704
Int. Cl. D21c *5/02*
U.S. Cl. 162—5 18 Claims

Printing ink on printed paper materials is deinked by the process of the present invention in which the printed paper materials are beaten in an aqueous system containing a polyolefin dispersed or emulsified in micro-fine particles with a surface active agent such as a dispersing agent or emulsifier, and then, resultant wastes containing the printing ink which are desorbed from the printed paper materials and adsorbed on the polyolefin particles are isolated from the system. Hydrophilic polymers such as starch, glue and carboxymethyl cellulose are effective for stabilizing the deinking system.

Further, it is helpful for sufficiently isolating the wastes to add organic solvents, emulsions containing the solvents, clays, or water soluble salts capable of disassociating the di- or polyvalent metal cation in water.

3,764,461
RECOVERY AND SEPARATION OF CHEMICALS PRODUCED DURING KRAFT PULPING OPERATIONS
Kenneth W. Baierl, Marysville, Wash., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Sept. 9, 1971, Ser. No. 178,862
Int. Cl. D21c *11/00*
U.S. Cl. 162—16 11 Claims



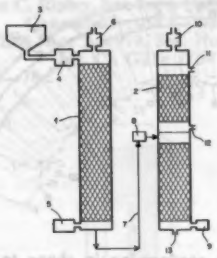
Chemicals, such as methanol, ethanol, acetone, dimethyl disulfide, dimethyl sulfide, methyl mercaptan, crude turpentine and hydrogen sulfide which are produced during Kraft pulping operations are recovered by treating liquors containing said chemicals with steam in a fractionating column. The chemicals are further separated by refluxing the more volatile chemicals in said fractionating column to isolate a volatile chemical fraction and a crude turpentine fraction comprising primarily α-terpineol. The chemical present in the volatile chemical fraction can then be separated by a four-step process which comprises:

(a) treating the volatile chemical fraction with a hot caustic solution to remove a sulfur-containing-chemicals fraction from said volatile chemical fraction,
(b) treating the volatile chemical fraction with steam in a second fractionating column to get a mixture of chemicals,
(c) refluxing the more volatile chemicals present in said mixture to separate a second volatile chemical fraction and a second crude turpentine fraction comprising primarily α-pinene, and
(d) separating the chemicals in said second volatile chemical fraction by distillation.

3,764,462
RECOVERY OF FURFURAL AND METHANOL FROM SPENT PULPING LIQUORS
Kenneth W. Baierl, Marysville, Wash., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Sept. 9, 1971, Ser. No. 179,126
Int. Cl. D21c *11/00*
U.S. Cl. 162—16 9 Claims

Chemicals, such as acetaldehyde, acetone, acetic acid, ethanol, furfural, methanol, p-cymene and sulfur dioxide, which are produced during sulfite pulping and similar

operations are recovered by treating liquors and condensates containing said chemicals with steam in a fractionating column. The chemicals are further separated by refluxing the more volatile organic compounds in the fractionating column to recover methanol from the top of



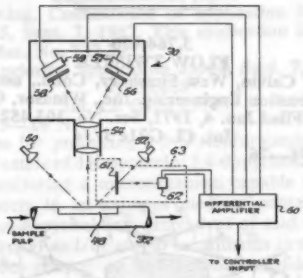
the column and furfural therebelow. The quality of the recovered chemicals is improved by a preliminary steam treatment of the liquors and condensates prior to their introduction into the fractionating column to recover sulfur dioxide therefrom.

3,764,463

METHOD AND APPARATUS FOR CHROMATIC CONTROL OF PULPING PROCESS

John A. Histed, L'Orignal, William A. Lawford and Murray J. McLeod, Hawkesbury, Robert G. Wendeborn, London, Ontario, and Dennis R. Catford, Gold River, British Columbia, Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada

Filed June 14, 1971, Ser. No. 152,728
Int. Cl. D21c 7/12
U.S. Cl. 162—49 **16 Claims**



A method and apparatus for generating a control signal by carrying out a chlorination reaction on a sample of pulp slurry at an elevated temperature for a relatively short period of time and measuring the difference in reflectance at two predetermined wavebands. In one embodiment the pulp sample is taken from a pulp digester and the control signal is representative of the cooking degree of the pulp, as measured by the Kappa No., Chlorine No. or Permanganate No. The control signal is electronically fed to the input of a device for automatically controlling the operation of the digester to maintain a desired cooking degree. In another embodiment the sample is taken immediately after the addition of chlorine in the chlorination stage and the control signal is electronically used to automatically vary the level of chlorine applied to the chlorination stage.

3,764,464

PROCESS FOR PREPARING CELLULOSE PULP BY ALKALINE OXYGEN DIGESTION OF WOOD IN THE PRESENCE OF ALKALI METAL CARBONATE OR BICARBONATE

Hans Olof Samuelson, Goteborg, Sweden, assignor to Mo och Domsjo AB, Ornskoldsvik, Sweden

Filed June 18, 1971, Ser. No. 154,486
Claims priority, application Sweden, June 22, 1970, 8,589/70
Int. Cl. D21c 9/10
U.S. Cl. 162—65 **33 Claims**

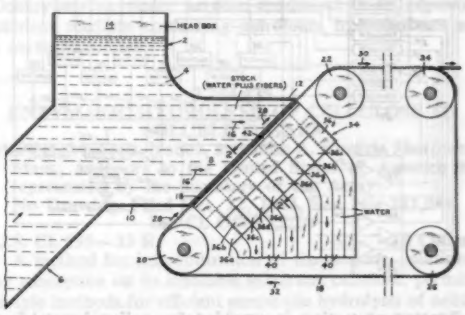
Cellulose pulp is prepared from wood by alkaline oxygen digestion in the presence of alkali metal carbonate or bicarbonate. A gas phase including unreacted oxygen gas and carbon dioxide is formed during the digestion, and the carbon dioxide is separated from the gas phase by absorption while oxygen gas from which the carbon dioxide has been separated is recycled for subsequent digestion of wood.

3,764,465

SUCTION BOX AND BAFFLE FOR FOURDRINIER TYPE OF PAPERMAKING MACHINE

Thomas S. Bartley, Mobile, Ala., and John Gilbert Descary, Lachine, Quebec, R. James Futcher, Beaconsfield, Quebec, and R. Gopala Krishnan, Montreal, Quebec, Canada, assignors to International Paper Company, New York, N.Y.

Filed July 21, 1971, Ser. No. 164,499
Int. Cl. D21f 1/52
U.S. Cl. 162—351 **3 Claims**



A method and apparatus for making nonwoven fabrics wherein water and fiber stock is delivered to a Fourdrinier wire moving endlessly through a stock tank, the fibers being deposited on the wire in a forming zone and the water passing through said wire into a suction box comprising a plurality of adjacent and individually controlled compartments, each of said compartments having a bottom sloping in a direction transverse to the direction of travel of said wire and each of said compartments having a flow restricting device such as a baffle mounted therein, wherefore a substantially uniform pressure differential through the moving wire across its width is obtained so as to result in an even deposit of fibers thereon.

3,764,466

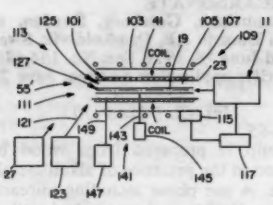
PRODUCTION OF PLASMAS BY LONG-WAVELENGTH LASERS

John M. Dawson, Princeton, N.J., assignor to the United States of America as represented by the United States Atomic Energy Commission

Continuation-in-part of application Ser. No. 12,518, Jan. 20, 1970. This application Apr. 1, 1971, Ser. No. 130,368
Int. Cl. G21l 1/00
U.S. Cl. 176—1 **2 Claims**

Long-wavelength laser system for heating low-density plasma to high temperatures. In one embodiment, means

are provided for repeatedly receiving and transmitting long-wavelength laser light in successive stages to form a laser-light beam path that repeatedly intersects with the



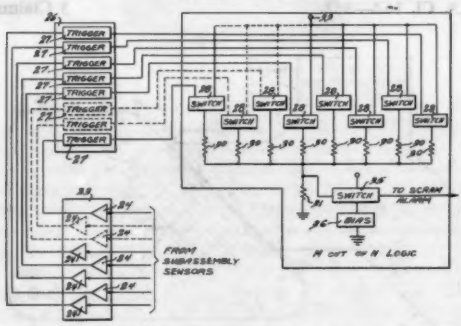
equilibrium axis of a magnetically confined toroidal plasma column for interacting the laser light with the plasma for providing controlled thermonuclear fusion. Embodiments for heating specific linear plasmas are also provided.

3,764,467

FAST BREEDER REACTOR PROTECTION SYSTEM

Jan B. van Erp, Hinsdale, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 22, 1971, Ser. No. 211,020
Int. Cl. G21c *7/00, 17/00*
U.S. Cl. 176—19 R 3 Claims



Reactor protection is provided for a liquid-metal-fast breeder reactor core by measuring the coolant outflow temperature from each of the subassemblies of the core. The outputs of the temperature sensors from a subassembly region of the core containing a plurality of subassemblies are combined in a logic circuit which develops a scram alarm if a predetermined number of the sensors indicate an over temperature condition. The coolant outflow from a single subassembly can be mixed with the collant outflow from adjacent subassemblies prior to the temperature sensing to increase the sensitivity of the protection system to a single subassembly failure. Coherence between the sensors can be required to discriminate against noise signals.

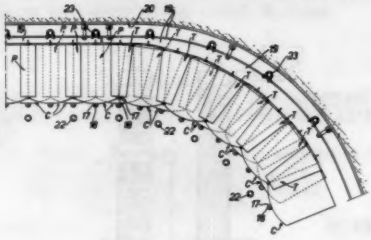
3,764,468

THERMAL INSULATION FOR THE SURFACE OF A CONTAINER FOR A LIQUID METAL COOLED NUCLEAR REACTOR

John Richard Hind, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 11, 1970, Ser. No. 10,461
Claims priority, application Great Britain, Feb. 20, 1969, 9,361/69
Int. Cl. G21c *11/08*
U.S. Cl. 176—40 7 Claims

A thermal insulation assembly for the inside surface of a container for a liquid metal cooled nuclear reactor comprises a multiplicity of gas filled and sealed cylindrical containers mounted side by side with their longitudinal axes normal to the surface, the spaces between the cylindrical containers being occupied by gas filled and sealed



prismatic containers conforming in shape to the spaces between the cylindrical containers, the surfaces of the cylindrical containers being spaced by a small amount from the corresponding surfaces of the prismatic containers.

3,764,469

CARBON-SILICON COATING ALLOYS FOR IMPROVED IRRADIATION STABILITY

Jack C. Bokros, San Diego, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,908
Int. Cl. G21c *3/06*
U.S. Cl. 176—67 1 Claim

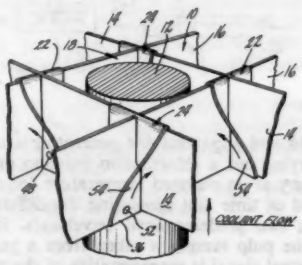
For ceramic nuclear fuel particles, a fission product-retaining, carbon-silicon alloy coating exhibiting low shrinkage after exposure to fast neutron fluences of 1.4 to 4.8×10^{21} n./cm.^{2} (E=0.18 mev.) at irradiation temperatures from 950° to 1250° centigrade. Isotropic pyrolytic carbon containing from 18 to 34 weight percent of silicon is co-deposited from a gaseous mixture of propane, helium and silane at a temperature of 1350° to 1450° centigrade.

3,764,470

FLOW TWISTER

John N. Calvin, West Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

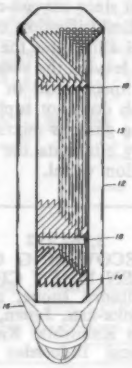
Filed Jan. 4, 1971, Ser. No. 103,452
Int. Cl. G21c *3/34*
U.S. Cl. 176—76 10 Claims



A flow twister for the cooling fluid flowing longitudinally in channels between spaced parallel nuclear reactor fuel elements positioned laterally by intersecting grid members. The twister is a U-shaped metal sheet straddling one grid member at an intersection. The free ends of the U are folded on themselves and form two pairs of oppositely directed spirals and a pair of slots receiving the other grid member. The sheet is slotted in alignment

with the pair of slots. The twisters direct cooling fluid inwardly toward and spirally around the adjacent fuel rod.

3,764,471
NUCLEAR FUEL ASSEMBLY
Charles C. Ripley, San Jose, Calif., assignor to General Electric Company
Filed June 1, 1970, Ser. No. 41,848
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **18 Claims**



A fuel assembly containing nuclear fuel rods in spaced array comprising a tubular coolant flow channel and fuel rod spacer assemblies formed of cross-laced beams supported directly by the flow channel.

3,764,472
PROCESS FOR PRODUCING 1-β-D-RIBOFURANOSIDE - 5' - PHOSPHORIC ACID ESTERS OF 1H-PYRAZOLO(3,4-d)PYRIMIDINES
Kiyoshi Nakayama, 4900 Kamitsuruma, Sagamihara-shi, Japan
No Drawing. Continuation of application Ser. No. 665,965, Sept. 7, 1967. This application June 17, 1968, Ser. No. 737,305
Claims priority, application Japan, Sept. 7, 1966, 41/58,638
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **8 Claims**

A process for producing 1-β-D-ribofuranoside-5'-phosphoric acid esters of 1H-pyrazolo(3,4-d)pyrimidines which comprises culturing a microorganism capable of producing said esters in an aqueous medium containing 1-H-pyrazolo(3,4-d)pyrimidine, derivatives of said pyrimidine having hydroxyl and/or amino substituents in the 3- and/or 4-position thereof or 1-β-D-ribofuranoside, and recovering the corresponding 1-β-D-ribofuranoside-5'-phosphoric acid esters formed from the resultant culture liquor. The products thus obtained are nucleotide antagonists and some of them are potential inhibitors of xanthine oxidase.

3,764,473
PROCESS FOR PRODUCING L-GLUTAMIC ACID
Katsunobu Tanaka, Kazuo Kimura, Takeo Suzuki, and Ken Yamaguchi, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 643,832, June 6, 1967. This application July 31, 1968, Ser. No. 748,983
Claims priority, application Japan, June 17, 1966, 41/38,852
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **10 Claims**

Process for producing L-glutamic acid which comprises culturing a microorganism capable of producing L-glutamic acid under aerobic conditions in an aqueous nutrient medium containing at least one hydrocarbon as the main carbon source and an antibiotic and a dispersing agent for said hydrocarbon. Exemplary antibiotics include penicillin, bacitracin, cycloserine, kanamycin, streptomycin, spiramycin, Cefalotin, Cephaloridine and novobiocin. Exemplary dispersing agents include anionic, cationic and nonionic substances and higher fatty acids and organic esters. The combination of an antibiotic and a dispersing agent in the medium gives a synergistic effect, resulting in a remarkable acceleration in the production of L-glutamic acid.

3,764,474
MIXED CULTURE OF YEASTS ON HYDROCARBON
Kiyoshi Watanabe and Hiroshi Yano, Takasago, Kenji Suzuki, Kakogawa, Yoshimitsu Mekata, Takasago, and Hajime Kawaharada, Kakogawa, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed July 7, 1970, Ser. No. 53,023
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R **9 Claims**

Yeast cells having increased protein content are produced with improved assimilating efficiency by cultivating a mixed culture of a hydrocarbon-assimilating yeast such as strains belonging to the genera Torulopsis, Candida, Pichia and Zygosaccharomyces and a hydrocarbon-unassimulating yeast such as strains belonging to the genera Trichosporon, Candida, Rhodotorula, Torulopsis and Debaryomyces, under aerobic conditions in an aqueous nutrient medium containing petroleum hydrocarbons as a carbon source.

3,764,475
ENZYMATIC HYDROLYSIS OF CELLULOSE TO SOLUBLE SUGARS
Mary H. Mandels, Natick, and John A. Kostick, Sherborn, Mass., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Dec. 22, 1971, Ser. No. 211,048
Int. Cl. C12d *13/04*
U.S. Cl. 195—33 R **10 Claims**

A method for immobilization of the enzyme, cellulase, by adsorption on its insoluble substrate, cellulose, permits simple methods for efficient enzymatic hydrolysis of cellulose to glucose. A stable cellulase enzyme obtained from a culture of *Trichoderma viride* QM 9123 is combined with cellulose to form a suspension having at least 100 parts by weight of cellulose to each part by weight of crude enzyme protein. The cellulose-cellulase suspension is maintained at a pH of from 4.0 to 5.0 and the temperature is maintained within the range of from 25° to 50° C. during hydrolysis. Under these conditions and with the continuous addition of fresh cellulose to maintain the above ratio of cellulose to cellulase, the cellulase enzyme is effectively immobilized by adsorption on unhydrolyzed cellulose, allowing the removal of the soluble sugars by simple separation procedures while retaining most of the otherwise soluble enzyme material.

3,764,476
PROCESS FOR PRODUCING MICROBIAL CELLS
Shigeo Abe, Tokyo, and Mamoru Kohata, Kawasaki, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Filed Oct. 21, 1971, Ser. No. 191,480
Claims priority, application Japan, Oct. 28, 1970, 45/94,329
Int. Cl. C12b *1/00*
U.S. Cl. 195—49 **11 Claims**

A process for producing microbial cells which comprises culturing a methanol-assimilating bacterium belonging to *Protaminobacter ruber* in an aqueous nutrient

medium, controlling the addition of methanol to said medium as the main carbon source to effect rapid growth of microbial cells in said medium, and recovering the microbial cells therefrom.

3,764,477

RESIN-BOUND, PROTEIN-LIKE ACTIVE AGENTS PREPARED BY REACTING A PROTEIN WITH A WATER INSOLUBLE POLYMER OF ACRYLIC OR METHACRYLIC ACID ANHYDRIDE

Klaus Lehmann and Apollonio Conte, Darmstadt, Germany, assignors to Rohm GmbH, Darmstadt, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 785,382, Dec. 19, 1968. This application May 12, 1971, Ser. No. 142,805

Claims priority, application Germany, Dec. 27, 1967, P 16 95 662.0

Int. Cl. C07g *7/02*; C08f *37/08*; C12k *1/00*

U.S. Cl. 195—63 10 Claims

A water-insoluble biologically-active material comprising a proteinaceous biologically-active agent covalently bound to a water-insoluble polymer of acrylic anhydride or methacrylic anhydride. Method for making said material by contacting said biologically-active agent and polymer.

3,764,478

STABILIZED ENZYMATIC TEST REAGENTS

Hans Ulrich Bergmeyer, Tutzing, Upper Bavaria, and Erich Bernt, Munich, Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

No Drawing. Filed June 9, 1970, Ser. No. 44,877

Claims priority, application Germany, June 13, 1969, P 19 30 059.5

Int. Cl. G01n *31/14*

U.S. Cl. 195—99 8 Claims

Enzymatic test reagents containing nicotinamide-adenine-dinucleotide and/or nicotinamide-adenine dinucleotide phosphate, in reduced or oxidized form, or purine or pyrimidine nucleotides, are stabilized by incorporating therein effective amounts of polyvinyl-pyrrolidone.

3,764,479

DISK FLOTATION DETERMINATION OF CATALASE ACTIVITY

John A. Bergeron and George M. J. Slusarczuk, Schenectady, N.Y., assignors to General Electric Company

Filed Sept. 28, 1970, Ser. No. 75,867

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R 4 Claims

An inert, wettable (by an aqueous system) bibulous (interconnected pore system) material impregnated with a stable, solid substance able to release hydrogen peroxide upon dissolution thereof in an aqueous system is specifically described for improved response in the quantitative and qualitative determination of catalase by disc flotation. The specific construction described is particularly adapted to quick-screening tests for the detection of bacteriuria and/or renal pathology.

3,764,480

MEASURING SURFACE BACTERIA

Glen J. Jedlicka, Riverside, Warner Mike Hill, Downers Grove, and Joseph G. Heck, Lombard, Ill., assignors to Armour and Company, Phoenix, Ariz.

Filed Aug. 25, 1971, Ser. No. 174,816

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 R 11 Claims

The surface of a sterilized culture medium containing 2,3,5 - triphenyltetrazolium chloride and titanium dioxide is pressed against a surface to be investigated to pick up bacterial present thereon, the medium is then incubated, and the reflectivity of the medium is then measured to provide a surface bacterial count.

3,764,481

PROCESS FOR THE PREVENTION OF EXPLOSIONS IN FERMENTATION REACTIONS INVOLVING BURNABLE COMPONENTS

Hans Muller, Im Almendli, Erlenbach, Zurich, Switzerland

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,910

Claims priority, application Switzerland, Sept. 5, 1969, 13,522/69

Int. Cl. C12b *1/14*

U.S. Cl. 195—109 9 Claims

In fermentation reactions in which burnable compounds are used as the source of carbon, the possibility of explosion is present since oxygen-containing gases must also be introduced. Emulsification of the entire contents of the reaction vessel eliminates the danger of explosion within the vessel. On leaving the vessel, the emulsion may be broken either by mechanical or chemical means. At this point a gas which does not support combustion may be added to dilute the gaseous mixture released from the emulsion and thereby eliminate the danger of explosion external to the reaction vessel.

3,764,482

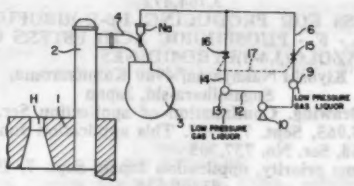
METHOD FOR RECOVERING GAS GENERATED IN A COKE OVEN WHEN CHARGING COAL

Minoru Yoshida, Minoru Inoue, and Suetoshi Koike, Kitakyushu, Fukuoka-ken, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, also known as Mitsubishi Chemical Industries Limited, Tokyo-to, Japan

Continuation-in-part of application Ser. No. 38,188, May 18, 1970. This application May 28, 1971, Ser. No. 148,146

Int. Cl. C10b *27/04*

U.S. Cl. 201—40 2 Claims



In a method and apparatus for recovering gas generated in a coke oven wherein a fluid is injected into a conduit interconnecting the coke oven and a gas collecting main, low pressure gas liquor is injected during normal operation of the oven to cool the gas, and high pressure gas liquor is injected during coal charging to draw the gas in the coke oven into the gas collecting main.

3,764,483

ROTATING DISK STILL WITH A HYDRODYNAMICALLY APPLIED THIN FILM

Badawi W. Tleimat, 2743 Wiswall Drive, Richmond, Calif. 94806

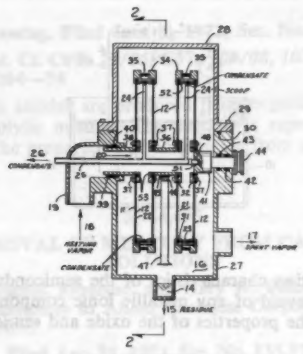
Filed Oct. 5, 1970, Ser. No. 77,883

Int. Cl. B01d *1/22, 3/08, 3/28*

U.S. Cl. 202—236 3 Claims

A single-effect still is composed of a chamber which houses a rotating heat-transfer disk mounted on a hollow shaft. Distilland is hydrodynamically spread into a thin film on one side of the rotating disk by a stationary flexible blade. Heating vapor is brought into contact with the other side of the disk. The latent heat released by the condensation of the heating vapor evaporates a fraction of the distilland as a pure vapor leaving a more concentrated

residue. Preferably pairs of such disks provide interconnected parallel cavities in which the heating vapor condenses and is withdrawn from the periphery of the cavity



by a stationary scoop communicating with a central tube going outside of the still. Collected residue is taken outside of the still from the bottom of the chamber.

3,764,484

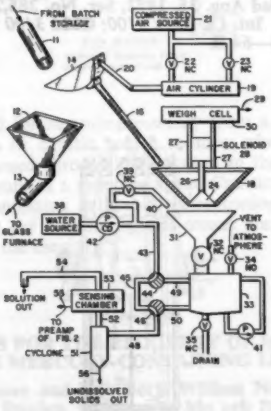
METHOD FOR DETERMINING CONCENTRATION OF AN ELEMENT IN A SAMPLE

David M. H. Platt, Harrodsburg, Ky., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of application Ser. No. 29,433, Apr. 17, 1970. This application Oct. 26, 1971, Ser. No. 192,361

Int. Cl. G01n *27/26*

U.S. Cl. 204—1 T **9 Claims**



Disclosed is a method for automatically determining the weight or concentration of a compound or element in a solution. A sensing chamber containing at least one ion-sensing electrode is provided with a continuous flow of carrier fluid. The solution is mixed with the carrier fluid and the resultant mixture flows to the sensing chamber. The electrical output of the ion sensing electrode continuously indicates the concentration of a specific ion in the liquid mixture reaching the chamber. After the electrical output of the electrode begins to increase, this output is integrated for a predetermined period of time while the mixture flows through the sensing chamber.

3,764,485

METHOD OF MAKING AND USING ELECTROPLATING MATRIX

Dan Jacobus, New Brighton, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.

No Drawing. Filed Jan. 27, 1972, Ser. No. 221,388

Int. Cl. C23b *7/00*

U.S. Cl. 204—11 **5 Claims**

An electroforming matrix is produced by first laying out on a base plate a pattern using a double layer of photoresist and then subjecting the plate with the photoresist to alternate cycles of heat treating and plating. A matrix processed in this fashion can be used over and over again many times to produce circuits and parts made by electroforming or electrodeposition.

3,764,486

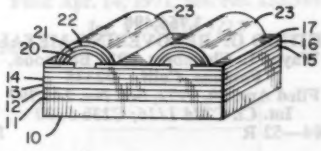
METHOD OF MAKING MEMORY PLANES

Meryl W. Tinklenberg, St. Paul, and Peter L. Morawetz, Minneapolis, Minn., and Roger A. Olson, Amery, Wis., assignors to Buckbee-Mears Company, St. Paul, Minn.

Original application July 8, 1969, Ser. No. 839,917, now abandoned. Divided and this application Jan. 3, 1972, Ser. No. 215,226

Int. Cl. C23b *7/02, 5/48*

U.S. Cl. 204—12 **5 Claims**



A method of electrodeposition and selective etching to produce a set of digit lines suitable for use in a magnetic memory device.

3,764,487

METHOD OF PLATING PART OF MOLDINGS OF TRANSPARENT POLYSTYRENE SERIES RESINS

Hiroya Yamamoto and Youichiro Tokita, Tokyo, Kenzi Fuziyoshi, Yokohama, Naoatu Kasuga, Kawasaki, and Akiyuki Akamatsu and Hiroo Sakurai, Yokohama, Japan, assignors to Showa Denko K.K., and Toyo Kako Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,974

Claims priority, application Japan, Mar. 31, 1971, 46/19,082

Int. Cl. B44d *1/52*; C23b *5/48, 5/60*

U.S. Cl. 204—15 **9 Claims**

A method of plating the desired portions of the surface of moldings of transparent polystyrene series resins which consists in coating said surface portions with a paint mainly formed of high molecular compounds containing fluorine or chlorine; dispersing a solvent with a solubility parameter of 7.0 to 11.0 selected from the group consisting of aromatic hydrocarbons, chlorinated hydrocarbons, alicyclic hydrocarbons, ketones and esters in the water using an interface active agent so as to prepare an emulsion; dipping the molding in such emulsion containing 0.2 to 30 percent by weight of the solvent, warm water and etching solutions in succession; and subjecting the molding first to nonelectrolytic and then to electrolytic plating, thereby depositing a metal film only on the surface portions of the molding other than those coated with the paint.

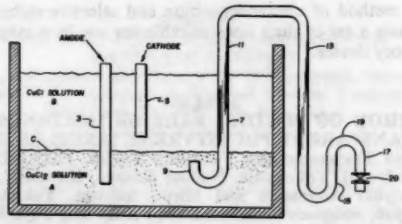
3,764,488
METALLIZING OF PLASTIC MATERIALS
Gunther Bernhardt, Hangelar, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany
No Drawing. Filed Aug. 28, 1970, Ser. No. 68,018
Claims priority, application Germany, Sept. 1, 1969, P 19 44 314.2
Int. Cl. B44d *1/092*; C23b *5/62*; C23f *17/00*
U.S. Cl. 204—38 B 12 Claims

In metallizing of plastics, the plastic articles are sensitized with an acid solution of a trivalent metal of the 5th main group of the Periodic Table, e.g. arsenic, and are thereafter subjected to an electrolytic metallizing step.

3,764,489
ELECTRODEPOSITION OF GOLD ALLOYS
Franco Zuntini, Andre Meyer, and Pierre Antony, Geneva, Switzerland, assignors to Oxy Metal Finishing Corporation, Warren, Mich.
No Drawing. Continuation-in-part of abandoned application Ser. No. 880,950, Nov. 28, 1969. This application Mar. 27, 1972, Ser. No. 238,473
Int. Cl. C23b *5/42*
U.S. Cl. 204—43 G 13 Claims

An aqueous gold alloy plating bath for the electrodeposition of gold and one or more metals selected from Groups II–B through VI–B of the Periodic Table of Mendelyeev and a method for said codeposition. The use of a soluble anode of the alloying metal in the codeposition of gold with that metal, along with one or more other metals from Groups II–B through VI–B is described. The preferred alloy is tin-lead-gold.

3,764,490
METHOD OF RECOVERING METALS
Wayne L. Chambers, 8921 Boxwood, Fontana, Calif. 92335
Filed Apr. 20, 1972, Ser. No. 245,797
Int. Cl. C22d *1/16*; C23b *5/20*
U.S. Cl. 204—52 R 19 Claims

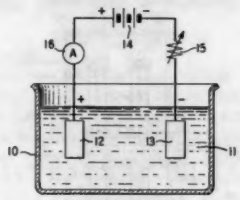


Ores of copper and other metals are extracted with an aqueous solution of a lower valent metal chloride such as cupric chloride, HCl and an alkali metal chloride such as sodium or potassium chloride at an elevated temperature for example 100° C. These reagents are advantageously present as a complex such as $HNaCuCl_4$.

The resulting cuprous chloride solution is recovered and is electrolyzed to produce copper metal and cupric chloride. The cupric chloride is caused to settle to the bottom of the cell and is withdrawn for recycle.

3,764,491
ELECTROLYTIC OXIDATION OF SILICON
Bertram Schwartz, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 13, 1971, Ser. No. 207,051
Int. Cl. C01b *33/00*; C23c *17/00*
U.S. Cl. 204—56 R 6 Claims

An electrolytic oxidation system is described for growing an oxide on the surface of silicon semiconductors. The electrolyte is an aqueous solution of hydrogen peroxide. Thick oxides may be grown in relatively short periods of time at room temperature, thus avoiding thermal damage

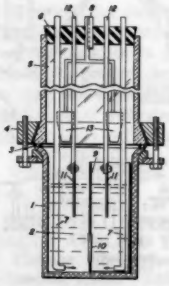


to the junction characteristics of the semiconductor. The system is devoid of any metallic ionic component which can affect the properties of the oxide and semiconductor.

3,764,492
ELECTROLYTIC PREPARATION OF ESTERS FROM ORGANO HALIDES
Manuel M. Baizer, Creve Coeur, and John H. Wagenknecht, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Jan. 10, 1972, Ser. No. 216,721
Int. Cl. C07b *29/06*; C07c *67/00, 69/00*
U.S. Cl. 204—59 R 17 Claims

Esters are obtained by electrolytic reduction of a mixture of aliphatic halide and carbon dioxide.

3,764,493
RECOVERY OF NICKEL AND COBALT
Larry J. Nicks, Henderson, and Kenneth P. V. Lei and Thomas A. Sullivan, Boulder City, Nev., assignors to the United States of America as represented by the Secretary of the Interior
Filed Aug. 31, 1972, Ser. No. 285,263
Int. Cl. B01k *3/00*; C22d *3/00*
U.S. Cl. 204—64 R 4 Claims



Nickel and cobalt are separated and recovered from ores or alloy scrap by selective cathodic reduction and deposition of nickel in a galvanic cell. The galvanic cell employs separate cathode and anode sections, a nickel cathode, a cobalt anode and a fused salt electrolyte. The catholyte and anolyte compartments of the cell are connected by means of a porous diaphragm, while the cathode and anode are directly electrically connected externally.

3,764,494

PRODUCTION OF ORGANIC AMIDES FROM ORGANIC NITRILES

Ronald J. Allain and David G. Braithwaite, Brookhaven, Miss., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed June 1, 1972, Ser. No. 258,866

Int. Cl. C07b *29/06*; C07c *103/08, 103/12*
U.S. Cl. 204—74 6 Claims

Organic amides are produced from organic nitriles by an electrolytic method. The process is especially applicable to the preparation of acrylamide from acrylonitrile.

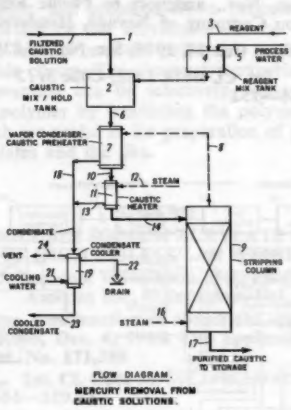
3,764,495

REMOVAL OF MERCURY FROM CAUSTIC SOLUTIONS

Joel P. Guptill, Syracuse, and Gary W. Foley, Camillus, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Apr. 21, 1971, Ser. No. 135,971

Int. Cl. C01d *1/08*; B01d *19/00, 47/00*
U.S. Cl. 204—99 16 Claims



FLOW DIAGRAM, MERCURY REMOVAL FROM CAUSTIC SOLUTIONS.

A method for removing mercury from a mercury cell caustic soda or caustic potash solution wherein a vapor or gas is passed through the solution in the presence of a small amount of a reducing agent. Caustic solutions are obtained containing as low a concentration of mercury as 0.01 part per million. Special means are provided for recovery of the mercury.

3,764,496

PROCESS FOR THE RECOVERY OF MERCURY FROM MERCURY-CONTAINING LIQUIDS

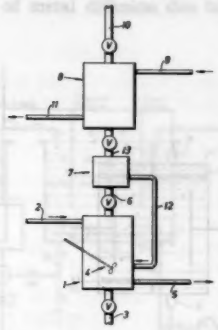
Bengt Hultman and Erik Borje William Norgren, Ornskoldsvik, Sweden, assignors to Mo och Domsjo Aktiebolaget, Ornskoldsvik, Sweden

Filed July 12, 1971, Ser. No. 161,579

Claims priority, application Sweden, July 16, 1970, 9,876/70

Int. Cl. C01d *1/08*; B01d *47/00*
U.S. Cl. 204—99 9 Claims

A process is provided for recovering mercury from mercury-containing liquids by stripping the mercury as vapor from the liquid with an inert gas, and washing the mercury vapor-containing inert gas with a solution containing an oxidizing agent, such as active chlorine, so as to absorb the mercury vapor and oxidize elemental mercury to mercury ion which can then be dissolved in the solution in the form of complex mercury ions such as mercury chloride complex ions.



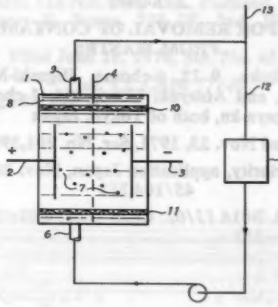
3,764,497

DECREASING CYANIDE CONTENT BY AN ELECTROCHEMICAL TECHNIQUE

Michael Tarjanyi, North Tonawanda, and Murray P. Strier, Amherst, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,919

Int. Cl. G02c *5/12*
U.S. Cl. 204—149 13 Claims



A method of decreasing the amount of the cyanide ions in a solution is described by passing a current through an electrolytic cell containing at least one positive and one negative electrode therein and having an electrolyte containing cyanide ions and a bed of non-conductive particles wherein the particles are distributed by the flow of the electrolyte through the bed of particles.

3,764,498

DECREASING CYANIDE CONTENT BY AN ELECTROCHEMICAL TECHNIQUE

Michael Tarjanyi, North Tonawanda, and Murray P. Strier, Amherst, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

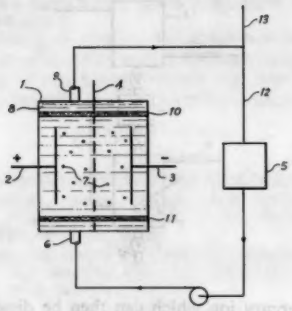
Filed Apr. 14, 1971, Ser. No. 133,928

Int. Cl. B01k *3/00*; C02c *5/12*
U.S. Cl. 204—149 17 Claims

A method of decreasing the amount of cyanide ions in a solution comprising passing a current through an elec-

trolytic cell containing at least one positive and one negative electrode therein and having an electrolyte containing cyanide ions and a bed of particles wherein the particles are distributed such that the porosity of the bed ranges from about 40% to about 80% and porosity is defined as

$$\left(1-\frac{\text{volume of particles}}{\text{volume of the cell wherein the particles are distributed}}\right)\times 100$$



3,764,499

PROCESS FOR REMOVAL OF CONTAMINANTS FROM WASTES

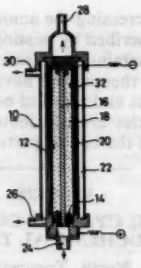
Katsuhiro Okubo, 9–12, 6-chome, Higashi-Mukoujima, Sumida-ku, and Atsuyuki Ueno, 454, 1-chome, Soshigaya, Setagaya-ku, both of Tokyo, Japan

Filed Nov. 23, 1971, Ser. No. 201,399

Claims priority, application Japan, Nov. 26, 1970, 45/104,213

Int. Cl. B01d 13/02; C02b 1/82; C02c 5/12

U.S. Cl. 204—151 4 Claims



In a process for continuous removal of contaminants including cyanides and toxic metals such as copper, zinc, silver, chromium, cadmium and others by the electrolytic process, an electrolytic cell is partitioned by a membrane into at least two electrolytic chambers which are filled with electric conductors in a granular, fibrous or segmental form with positive and negative major electrodes respectively thereby to form an anode chamber and a cathode chamber in abutting relation through the membrane. In accordance with the properties of contaminants or the presence of cyanides, the rinse water is selectively led into the anode chamber or the cathode chamber to effect the reduction and/or oxidation with decomposition of the toxic metals and cyanides so that the pollution concentration of the rinse water is lowered. The rinse water with poor pollution content is then migrated through the membrane into the cathode chamber or the anode chamber to bring a further reduction and/or oxidation with decomposition of the residual metals and cyanides for removal or destruction of the contaminants from the rinse water. The anode chamber or the cathode chamber filled with the granular or fibrous conductors with major electrodes may be replaced by a porous conductive metal sleeve.

3,764,500

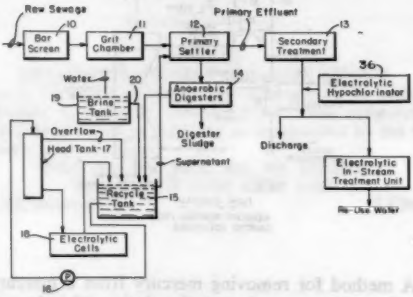
METHOD AND APPARATUS FOR ELECTROLYTIC TREATMENT OF SEWAGE

Fred D. Gibson, Jr., Las Vegas, Raymond C. Rhees, Boulder City, and James I. Gibson and Bruce B. Halker, Henderson, Nev., assignors to Pacific Engineering & Production Company of Nevada, Henderson, Nev.

Filed Oct. 28, 1970, Ser. No. 84,839

Int. Cl. B01k 1/82; C02c 5/12

U.S. Cl. 204—152 17 Claims



Apparatus and method for the electrolytic treatment of sewage is disclosed. According to the method, electrolytic treatment of a stream in a sewage treatment plant is provided at one or more selected locations. Thus, in an otherwise generally conventional sewage treatment facility employing various well-known techniques for the removal of solids and also well-known techniques for the bacteriological digestion of contained organic materials, the method contemplates the electrolytic treatment of the final effluent stream for the purpose of disinfection thereof. In addition, in systems wherein anaerobic digesters are employed to treat the sludge from primary settlers, electrolytic treatment of the digester supernatant is provided for the purpose of destroying its putrescent odor, improving its settleability and color, and reducing its BOD and COD. The apparatus employed includes one or more electrolytic assemblies employing anodes formed of a coating of lead dioxide on a substrate of graphite or titanium, and preferably includes a hollow, cylindrical metal tube which forms the cathode and with the anode contained therein and in the form of a cylindrical member whose

outer surface is equidistantly spaced from the inner surface of the cathode can. Electrolyte flows through the assembly from an inlet conduit near the bottom to an outlet conduit near the top, and electrical connections are made to the exterior cathode can and to a portion of the anode substrate which protrudes from the top of the assembly.

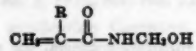
3,764,501

PHOTOPOLYMERIZABLE POLYAMIDE COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Takashi Hori and Hiroshi Kodama, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed July 30, 1970, Ser. No. 59,722
Claims priority, application Japan, Aug. 5, 1969, 44/61,423
Int. Cl. C08g *41/04*; C08j *1/10*
U.S. Cl. 204—159.15 1 Claim

Photopolymerizable polyamide compositions are provided which are the reaction products of a soluble polyamide polymer and an acrylamide of the formula



wherein R is hydrogen or methyl. The compositions of this invention are prepared by a process wherein at least a portion of the acrylamide of the above noted formula is reacted onto the polyamide to provide crosslinkable side chains. The photopolymerizable polyamides of this invention can be selectively converted into an insoluble polymer by irradiating the polymer with light and as such are useful in the preparation of photographic printing plates and the like.

3,764,502

WATER-SOLUBLE SODIUM ACRYLATE POLYMERS OF HIGH MOLECULAR WEIGHT

Alfred J. Restaino, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 782,000, Dec. 6, 1968. This application Aug. 12, 1971, Ser. No. 171,389
Int. Cl. C08f *13/00, 1/16, 3/44*
U.S. Cl. 204—159.22 9 Claims

High-molecular weight, water-soluble polymers of sodium acrylate and aqueous gels comprising from 25% to 40% by weight thereof, are prepared by irradiating solutions of sodium acrylate with high energy ionizing radiation, at a pH of from 4 to 14, and at a dose rate of less than 200,000 rads per hour to a total dose of from 1,000 rads to that sufficient to convert substantially all of the monomer to polymer. Polymers, and aqueous gels thereof, having intrinsic viscosities ranging upwards from 6 deciliters per gram, measured in 2 N sodium hydroxide at 25° C., are obtained over the entire indicated range of radiation intensities and total dosages in the more concentrated solutions. The polymers, or their aqueous gels, have utility as thickening and flocculating agents.

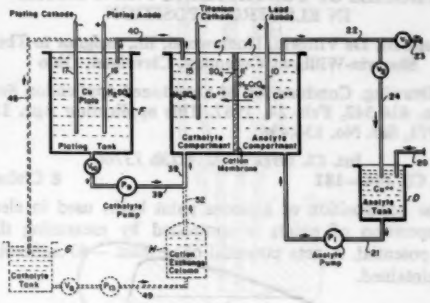
3,764,503

ELECTRODIALYSIS REGENERATION OF METAL CONTAINING ACID SOLUTIONS

Leslie E. Lancy, Ellwood City, and David C. Kruse, Pittsburgh, Pa., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Jan. 19, 1972, Ser. No. 219,090
Int. Cl. B01d *13/02*; C02c *5/12*
U.S. Cl. 204—180 P 19 Claims

A used or waste acid treating solution that has been contaminated by its dissolved metal content is introduced into an anodic cell or compartment of a dialysis cell system. Metal ions are passed from the anodic compartment through a cationic permselective permeable membrane into a cathodic cell or compartment of the system. A poor efficiency of metal diffusion due to its progressive



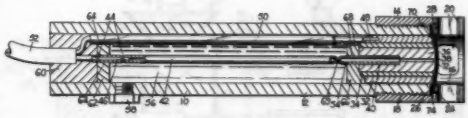
increase in concentration in the catholyte solution and the forming of uneven dendritic cathode deposits of the metal are avoided by passing the metal ions into an immediate cathodic cell that does not function to plate-out or deposit metal ions therein.

3,764,504

OXYGEN ANALYZING INSTRUMENT

John H. Arff, 118 NE. 24th Ave., Portland, Oreg. 97232, and James R. Burns, 738 SE. 2nd, Hillsboro, Oreg. 97123

Filed June 10, 1970, Ser. No. 45,156
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P 1 Claim



An instrument for indicating by its output the dissolved oxygen content in liquids. The instrument has an electric current generating source therein employing a novel structure which evenly distributes an electrolyte of such source on a detecting surface of the instrument whereby dissolved oxygen in the liquid reacts with the electrolyte to control the output of the instrument. The even distribution of the electrolyte on the detecting surface of the instrument utilizes an inner layer of electrolyte absorbing material and an outer layer having minute perforations for admitting oxygen. The instrument is designed particularly for portable use and is adapted to have a novel combination with a holder which includes means for removably supporting the instrument and an electric current responsive instrument electrically connected thereto and arranged to designate the dissolved oxygen content of the liquid in which a portion of the analyzing instrument is submerged. The present analyzing instrument also is de-

signed for controlling the operation of an ozone generator through the medium of a electric current responsive instrument and relay means operated by the latter instrument.

3,764,505

PROCESS OF CONTROLLING PAINT BATHS IN ELECTRODEPOSITION

Joseph M. De Vittorio, Homewood, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Continuation of abandoned application Ser. No. 618,342, Feb. 24, 1967. This application Apr. 15, 1971, Ser. No. 134,496

Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 8 Claims

The composition of aqueous paint baths used in electrodeposition of paints is controlled by measuring the zeta potential. A zeta potential of at least —40 millivolts is maintained.

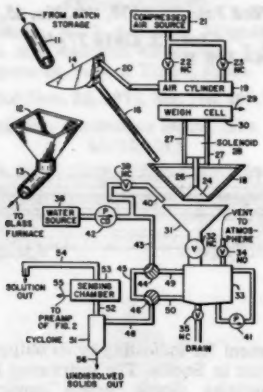
3,764,506

APPARATUS FOR DETERMINING CONCENTRATION OF AN ELEMENT IN A SAMPLE

David M. H. Platt, Harrodsburg, Ky., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of application Ser. No. 29,433, Apr. 17, 1970. This application Oct. 26, 1971, Ser. No. 192,360

Int. Cl. G01n 27/26
U.S. Cl. 204—195 R 15 Claims



Disclosed is an apparatus for automatically determining the weight or concentration of a compound or element in a solution. A sensing chamber containing at least one ion sensing electrode is provided with a continuous flow of carrier fluid. The solution is mixed with the carrier fluid and the resultant mixture flows to the sensing chamber. The electrical output of the ion sensing electrode continuously indicates the concentration of a specific ion in the liquid mixture reaching the chamber. After the electrical output of the electrode begins to increase, this output is integrated for a predetermined period of time while the mixture flows through the sensing chamber.

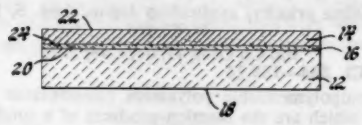
3,764,507

METHOD OF MAKING SEMICONDUCTOR LAYERS ON HIGH PURITY ALUMINA LAYERS

Matthew C. McKinnon, Warren, and Bernard A. MacIver, Lathrup Village, Mich., assignors to General Motors Corporation, Detroit, Mich.

Original application July 25, 1969, Ser. No. 844,817. Divided and this application Aug. 4, 1971, Ser. No. 168,847

Int. Cl. C23c 15/00
U.S. Cl. 204—192 2 Claims



An improved substrate material for semiconductor devices and methods for making same. The substrate includes a refractory like supporting layer coated with a high purity layer of reactively sputtered insulating material onto which a very high purity semiconductive layer is deposited. One device proposed for this substrate material is a diode assembly having an alumina substrate with a reactively sputtered layer of alumina on a major surface. A layer of P-type semiconductive material deposited on the sputtered layer and a P-N junction established in the layer.

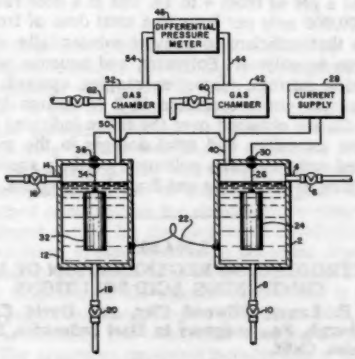
3,764,508

ELECTROCHEMICAL OXYGEN DEMAND MEASURING SYSTEM

Justin O. Johnson, Jr., Levittown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 23, 1972, Ser. No. 228,582

Int. Cl. G01n 27/26
U.S. Cl. 204—195 B 4 Claims



An electrochemical oxygen demand measuring system having a pair of test cells containing an aqueous test

sample and an aqueous reference sample, respectively. Each test cell has a pair of electrodes immersed in the fluid in the respective cell and connected in a series path between output terminals of a predetermined current source. Electrolysis of the respective fluids produces gaseous products from each cell with the net amount of test sample cell electrolysis products being affected by the oxygen demand of the test sample. The gaseous products from each cell are collected and applied to respective sides of a differential pressure measuring apparatus to produce an indication of the oxyyen demand of the test sample.

3,764,509

ELECTROLYTIC FURNACES FOR THE PRODUCTION OF ALUMINIUM

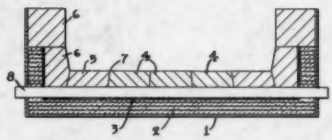
Karl Wilhelm Friedrich Etzel, Frankfurt am Main-Griesheim, and Peter Aeschbach, Steg, Switzerland, assignors to Schweizerische Aluminium AG (Swiss Aluminium Ltd.), Chippis, Switzerland

Filed Feb. 3, 1972, Ser. No. 223,068

Claims priority, application Germany, Feb. 4, 1971, P 21 05 247.1

Int. Cl. B01k *3/08*; C22d *3/02*

U.S. Cl. 204—243 R **13 Claims**



A set of blocks of carbon and/or graphite intended for assembly to form the cathode of a cell for the production of aluminium by fusion electrolysis, these blocks possessing four lateral surfaces, at least a pair of which opposed to each other being inclined at different angles to the vertical in order to obtain a mutual wedging of the blocks against upwards acting forces, particularly within a row of blocks arranged along a conductor bar. An electrolytic cell with a cathode made of such blocks.

3,764,510

METHOD AND APPARATUS FOR ELECTROLYTIC MATERIAL REMOVAL

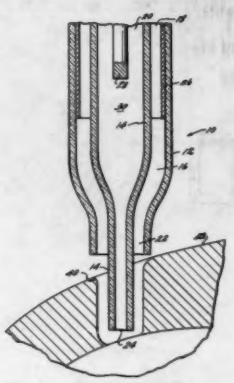
Guy Bellows, Cincinnati, Ohio, assignor to General Electric Company

Filed Apr. 19, 1972, Ser. No. 245,374

Int. Cl. B01k *3/00, 3/04*

U.S. Cl. 204—284 **3 Claims**

Material is removed electrolytically from a conductive workpiece to form a cavity the peripheral edge of which is radiused by first generating the cavity with a first stream of electrolyte charged cathodically with respect to the workpiece at an electrical potential sufficient to create in the electrolyte stream a condition at least of incipient glow. After generation of the peripheral edge, it is radiused by contacting the edge with a second stream of electrolyte shaped generally to conform with the shape of the peripheral edge and charged cathodically with respect to the workpiece independently from the first stream. The second stream is charged in timed relationship with the first stream to control the radiusing action.



The cathode tool used in such method includes a pair of electrodes electrically isolated one from the other and capable of being charged independently.

3,764,511

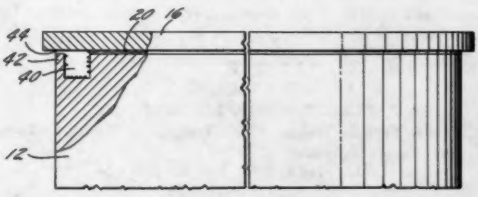
MOATED SUBSTRATE-HOLDING PEDESTAL

Herbert W. Glick, West Hartford, and Daniel H. Grantham, Glastonbury, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 29, 1972, Ser. No. 239,249

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **1 Claim**

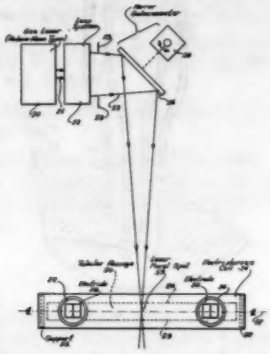


In an RF sputtering system, an electrode has pedestals for holding silicon wafers upon which the sputtered material is to be deposited. The pedestals are formed in a large conductive block with heating, cooling and temperature monitoring means, thereby to control the temperature of the wafers during the sputtering process. The disclosed improvement comprises an annular moat near the extremity of the wafer-mounting surface of the pedestal, which traps material, such as vacuum grease or gallium, used to thermally secure the wafer to the pedestal, which tends to erupt or spatter during the vacuum deposition process; the trapping of the material prevents its lodging on the surfaces of wafers when being processed.

3,764,512
LASER SCANNING ELECTROPHORESIS INSTRUMENT AND SYSTEM

Ivan A. Greenwood, Stamford, Conn., and Jesse C. Kaufman, Yorktown Heights, N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed May 2, 1972, Ser. No. 249,592
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **11 Claims**

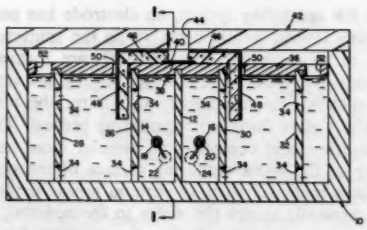


An improved instrument and system is provided for determining the electrokinetic, or zeta potential of dispersed particles in an aqueous solution. The system to be described includes a helium-neon laser, electrophoresis cell, a lens system for expanding and focusing the laser beam to produce a focal spot within the cell, a galvanometer driven mirror for reflecting the laser beam from the lens system into the cell, electronic circuitry for applying a potential across the electrodes of the cell causing the dispersed particles to migrate from one electrode to the other electrode, electronic scanning circuitry for the galvanometer driven mirror and a viewing microscope. The operator controls the angular displacement and rate of angular displacement of the mirror until the focused laser spot, as viewed through the microscope, tracks the particles in the cell. A control may be calibrated directly in zeta potential. The determination of the zeta potential is useful in determining the degree of stability of particle dispersion in aqueous solutions, and the like. The function of the scanning instrument and system of the present invention is to measure the zeta potential of colloidal particles dispersed in a solution.

3,764,513
ELECTROPHORESIS CHAMBER

Calvin A. Saravis, Waban, Mass., assignor to Marine Colloids, Inc., Rockland, Maine

Filed May 4, 1972, Ser. No. 250,424
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **6 Claims**

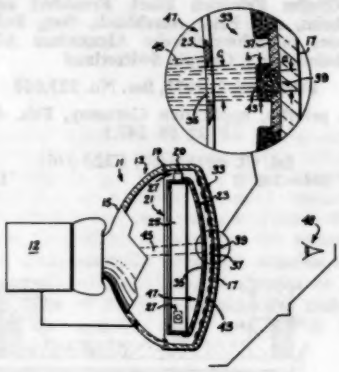


Electrophoresis apparatus with adjacent compartments arranged to hold buffer solution, means for supporting in position an impervious backing member having a gel layer on its upper surface, a cover with an aperture for applying samples and a layer of bibulous material fixed to the cover so as to be in contact with gel and the buffer solution when the cover is in position.

3,764,514
APPARATUS FOR COATING A PATTERN MASK FOR USE IN FORMING A COLOR CRT SCREEN STRUCTURE

Joseph N. Debernardis; Walter W. Slobbe, and Kenneth Speigel, all of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,704
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—299 **14 Claims**



An improvement is provided in the apparatus employed in temporarily modifying the aperture sizes in a patterned cathode ray tube mask member for utilization in selected steps of the procedure for fabricating a multiplex patterned color screen structure disposed on the interior surface of the tube viewing panel. By the improved apparatus, a basic or first coating material is electrophoretically disposed as a substantially semiporous coating to reduce the sizes of the initially defined apertures in the mask. The use of a foraminous electrode discretely spaced from the mask, along with the handling of the coating suspension, comprises a coating apparatus that facilitates the achievement of an improved temporarily modified mask structure.

3,764,515
PROCESS FOR HYDROCRACKING HEAVY HYDROCARBONS

Thomas E. Klovsky, El Sobrante, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 879,572, Nov. 24, 1969, abandoned. This application Apr. 23, 1971, Ser. No. 137,044
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 **5 Claims**

There is disclosed a process for hydrocracking coal or other heavy hydrocarbon fractions employing a molten catalyst system, including a mineral acid that is stable at reaction conditions, and a metal halide catalyst selected from zinc chloride, bromide or iodide, antimony bromide or iodide, tin bromide, titanium iodide, arsenic bromide or iodide, mercuric bromide or iodide, gallium bromide, or bismuth bromide. If a halogen acid is employed as the mineral acid, it is preferred that the halogen in the metal salt correspond to the halogen in the acid.

3,764,516

ISOMERIZATION OF WAXY LUBE STREAMS AND WAXES USING ZEOLITE CATALYST

Ib Steinmetz, Wilmington, and David S. Barmby, Media, both of Del., assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 828,746, May 28, 1969, Pat. No. 3,658,689. This application Apr. 24, 1972, Ser. No. 246,737

Int. Cl. C10g *35/06*; C07c *5/22*

U.S. Cl. 208—27 15 Claims

Waxy hydrocarbons, per se or in a petroleum fraction in the lubricating oil viscosity range, can be converted to oily, non-waxy hydrocarbons by contacting the wax or wax-containing stream with an acidic alumino-silicate zeolite catalyst (e.g., CeHY, GdHX, CaHX, MgHY, NiHY, etc.) preferably in combination with a hydrogenation catalyst (e.g., Ni, Co, Mo, W, Pt, Pd, Re, Ru, etc.) at temperatures above 300°F. and at elevated hydrogen pressure (e.g., 400–6,000 p.s.i., more preferred at least 1,500 p.s.i. of hydrogen, the hydrogen purity being 50–100 percent). Preferably, the zeolite contains polyvalent metal cations, is virtually free from alkali metal cations and halide ions and is substantially anhydrous (containing about 1–10% H_2O as determined by ignition analysis at 1,800°F.). Preferably, the isomerization is conducted at a temperature below the point where substantial hydrocracking will occur (e.g., below about 675°F.). More preferably, the temperature, space velocity, hydrogen pressure and gas recycle rate are so selected as to attain significant conversion of the waxy hydrocarbons to oils in the lubricating oil boiling range and with no appreciable conversion of the waxy hydrocarbons to materials boiling below the lubricating oil boiling range.

3,764,517

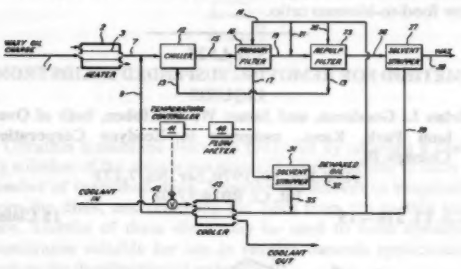
SOLVENT DEWAXING PROCESS

Robert Bodemuller, Jr., Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,070

Int. Cl. C10g *43/08*

U.S. Cl. 208—33 7 Claims



Lubricating oil of low pour test is produced in a solvent dewaxing process wherein wax-bearing oil is first heated to a temperature above the melting point of the wax contained therein, solvent is admixed with the heated oil, the solvent-oil mixture is cooled to a dewaxing temperature and the wax separated by filtration. Wax and dewaxed oils are recovered as products and solvent is recovered for recycle and reuse in the process. Cold solvent is added to the heated wax-bearing oil to rapidly cool the oil-solvent mixture to a temperature below the temperature of the melting point of the wax contained therein and above the temperature at which wax is crystallized from the oil-solvent mixture. The cooled oil-solvent mixture is then chilled at a final chilling rate of 0.3° to 3.0°F. per hour to a filtration temperature above 10° below the pour point of the dewaxed oil product. The filtration rate is continuously determined and the final chilling rate is controlled in response thereto.

3,764,518

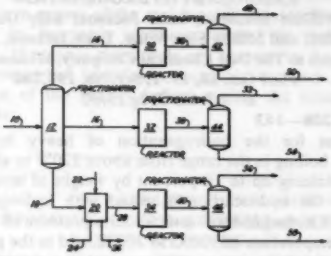
PROCEDURE FOR THE PREPARATION OF HIGH VISCOSITY - HIGH VI LUBRICATING OILS

Alfred M. Henke, Springdale, and Harry C. Stauffer, Cheswick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Oct. 20, 1971, Ser. No. 190,782

Int. Cl. C10g *13/00*, *37/02*

U.S. Cl. 208—80 5 Claims



A process for producing lubricating oils in order to obtain lubricating oils of enhanced viscosity index by hydrotreating various crude lubricating oil fractions separately and thereafter separately fractionating the hydrotreated materials.

3,764,519

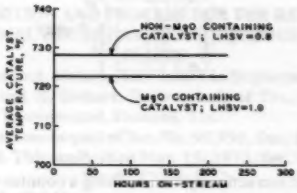
HYDROCARBON HYDROCONVERSION PROCESS USING SIEVE IN ALUMINA-SILICA-MAGNESIA MATRIX

Jarold A. Meyer, Concord, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 150,857, June 3, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,044

Int. Cl. C10g *13/02*, *37/00*; C01b *33/28*

U.S. Cl. 208—111 12 Claims



A hydrocarbon hydroconversion process comprising contacting a hydrocarbon feedstock and hydrogen with a catalyst comprising an alumina-silica-magnesia matrix containing a hydrogenation component, and a crystalline zeolitic molecular sieve substantially free of hydrogenation components, said catalyst having a specific gravity less than about 1.8, preferably 1.1 to 1.8, in a reaction zone at hydrocarbon hydroconversion conditions; also, said catalyst.

3,764,520

HYDROCARBON CONVERSION SYSTEM

Charles Newton Kimberlin, Jr., and Alexis Voorhies, Jr., both of Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 194,024, May 11, 1962, Pat. No. 3,238,123. This application Nov. 30, 1965, Ser. No. 510,688

Int. Cl. C10g *13/04*, *11/04*

U.S. Cl. 208—111 2 Claims

This application is concerned with processes for converting hydrocarbons in contact with a catalyst mixture comprising

two different alumino silicate zeolites having different ranges of pore size, i.e. 6–15 Angstroms and less than 6 Angstroms. Conversions such as hydrocracking, hydroisomerization and hydrogenation are disclosed employing additional catalytic components such as catalytic metals and inorganic oxide supports.

3,764,521

PROCESS FOR THE UPGRADING OF HEAVY CRACKING RESIDUES BY HYDROGENATION

Glenn William Mathews, Lake Jackson; Billy Duane Head, Angleton, and Milton Silas Wing, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 18, 1971, Ser. No. 190,280
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 **12 Claims**

Process for the hydrogenation of heavy hydrocarbon residues boiling in the range from about 220°F to about 650°F and containing up to 10 percent by weight of tars and gums wherein the hydrocarbon is mixed with hydrogen, passed through a hydrogenation zone under a pressure of 100–1,000 psig, a temperature of 100°C to 200°C, and in the presence of a supported platinum or palladium catalyst and cooled.

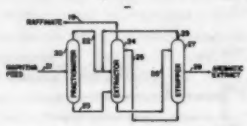
The hydrogenated product is then distilled to produce a high grade gasoline blend stock as the overhead and the bottoms are useful as a fuel oil.

3,764,522

SOLVENT EXTRACTION OF C_6-C_8 AROMATIC HYDROCARBONS

Andre W. Pollock, West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 20, 1971, Ser. No. 210,073
Int. Cl. C10g *21/28*; C07c *7/10*
U.S. Cl. 208—321 **3 Claims**



In a solvent extraction system utilizing a counter-current extraction column and an extractive distillation stripper for recovery of C_6—C_8 aromatic hydrocarbons, the feed is divided into light and heavy fractions containing, respectively, C_6—C_7 and C_8 aromatics. The light fraction is introduced to the extraction column at an intermediate level along with the overhead stream from the stripper column, while the heavy fraction is introduced to the extraction column at a lower level. This procedure avoids loss of C_8 aromatic components to the raffinate.

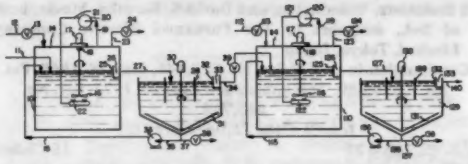
3,764,523

NITRIFICATION OF BOD-CONTAINING WATER

Michael Joseph Stankewich, Jr., North Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 1, 1972, Ser. No. 249,159
Int. Cl. C02c *1/10*
U.S. Cl. 210—5 **15 Claims**

A method for removing both carbon and nitrogen food from BOD-containing water by biochemical oxidation using oxygen gas in the presence of activated sludge, where the carbon food and carbon-consuming microorganisms only are removed in a first zone and a feed stream comprising at least the first zone effluent and containing BOD_5 of 20–100 ppm. is passed to the



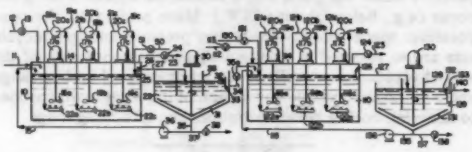
nitrification zone where a combined sludge is formed with both carbon and nitrogen-consuming microorganisms.

3,764,524

PHOSPHOROUS REMOVAL FROM WASTEWATER

Michael J. Stankewich, Jr., North Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 249,159, May 1, 1972. This application Nov. 13, 1972, Ser. No. 305,726
Int. Cl. C02c *1/10*
U.S. Cl. 210—5 **15 Claims**



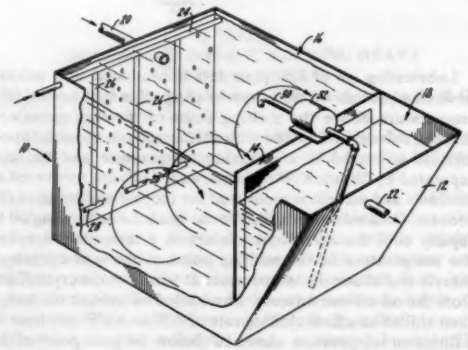
A method for removing both carbon food and phosphorous pollutant by biochemical oxidation and chemical precipitation using oxygen gas in the presence of activated sludge, where most of the carbon food and pollutant are removed in a first covered zone with the addition of phosphorous-precipitating compound and under high food-to-biomass ratio, and the effluent water is further purified in a second covered zone under low food-to-biomass ratio.

3,764,525

METHOD FOR REMOVING SUSPENDED SOLIDS FROM LIQUIDS

Brian L. Goodman, and James W. McKibben, both of Overland Park, Kans., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jan. 30, 1970, Ser. No. 7,171
Int. Cl. B01d *37/04*
U.S. Cl. 210—15 **15 Claims**



The invention provides a method and apparatus for removing suspended solids from liquids. In carrying out the method,

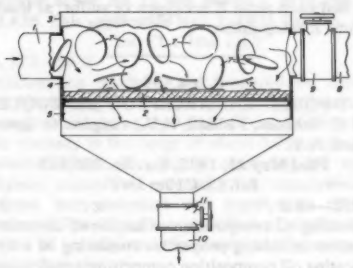
a liquid containing suspended solids is delivered to a screen with a directional component across the screen surface and a directional component through the screen. The screen has openings that are large enough to pass a majority of the suspended solids, and the screen has the ability to hold a layer of the solids on the upstream side thereof. The flow of the liquid is controlled so that the coating is formed and maintained on the screen, and serves as a filtration medium. The invention also provides improved apparatus which comprises means defining a liquid filtration zone having a screen separating it into influent and effluent zones. The screen has openings large enough to pass the majority of suspended solids and has the ability to hold a layer of the solids on the upstream side. Means are provided for delivering liquids and suspended solids to the screen with a directional component parallel to the face of the screen and a directional component through the screen.

3,764,526

DYNAMICS REVERSE OSMOSIS MEMBRANES OF ULTRATHIN DISCS

William M. King, Diamond Bar, Calif., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 28, 1972, Ser. No. 238,906
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **9 Claims**



Ultrathin membrane discs are prepared by spraying a casting solution of the membrane material onto a surface to form a number of individual discs, allowing the solvent to evaporate from the discs, and removing the discs from the casting surface. Slurries of these discs may be used to form dynamic membranes suitable for use in reverse osmosis applications such as the desalination of water.

3,764,527

METHOD FOR SEPARATING OIL FROM WATER

William E. Sohl, London, Ontario, Canada, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 833,172, June 13, 1969, abandoned. This application May 4, 1972, Ser. No. 250,373
Int. Cl. E02b *15/04;* **B01d** *17/02*
U.S. Cl. 210—30 **12 Claims**

A method for separating water-immiscible oils and oil-like substances from mixtures including said oils in an aqueous medium which comprises contacting the mixture with an oleophilic fibrous web comprising large numbers of interconnected, interstitial spaces for reception and retention of the oil to the exclusion of water.

3,764,528

PROCESS FOR REMOVAL OF SOLUBLE MERCURY RESIDUES FROM AQUEOUS PROCESS STREAMS

Eugene L. Cadmus, Andover, Mass., assignor to Ventron Corporation, Beverly, Mass.

Filed Nov. 8, 1971, Ser. No. 196,762
Int. Cl. C02b *1/36;* **C02c** *5/02*
U.S. Cl. 210—50 **1 Claim**

The invention contemplates the removal of soluble inorganic mercury compounds from waste streams by mixing with the stream an amount of sodium borohydride about 100 to 150 percent in excess of the stoichiometric amount required to reduce its inorganic mercury content to metal as a precipitate. If organic mercurials are present in the stream, they are converted to soluble inorganic mercury salts by chlorination of the stream before mixing the stream with borohydride.

3,764,529

METHOD OF MANUFACTURING FINE GRAIN CERAMIC BARIUM TITANATE

Yoshihiro Matsuo, Neyagawa; Hiromu Sasaki, Kadoma, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Feb. 17, 1972, Ser. No. 227,306
Int. Cl. C09k *1/60*
U.S. Cl. 252—1 **5 Claims**

A method of manufacturing fine grain barium titanate ceramic bodies from compositions including semiconducting barium titanate ordinarily doped with Nb_2O_5, Ta_2O_5, Sb_2O_5, Bi_2O_3, La_2O_3, CeO_2, Gd_2O_3, Sm_2O_3, and Y_2O_3, and dielectric barium titanate. Barium sulfate is included as a starting ingredient in the barium titanate materials, and the materials are calcined and fired in a conventional manner. The resulting ceramic materials have uniform fine grain size.

3,764,530

COMPOSITION AND PROCESS FOR THE REDUCTION OF THERMAL DEGRADATION OF AQUEOUS DRILLING FLUIDS

Peter D. Burland, Metarie, La.; James L. Stephenson, Houston, and Edward H. Stobart, Dayton, both of Tex., assignors to Milchem Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 96,991, Dec. 10, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 235,082
Int. Cl. C10m *3/22*
U.S. Cl. 252—8.5 C **5 Claims**

The present invention relates to a composition and process for the substantial reduction of thermal degration of aqueous drilling fluids and additives thereto by utilizing non-halogen-containing acrylic acid polymers or alkali metal or ammonium salts thereof having a weight average molecular weight no greater than about 2,500, said polymer being added to said drilling fluid in an amount from about 1 ppb to about 6 ppb.

3,764,531

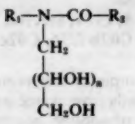
ANTIMICROBIAL AND LAUNDRY SOFTENING COMPOSITIONS

Hans-Werner Eckert, Dusseldorf; Arnold Heins, Hilden/Rhld., and Horst Bellinger, Dusseldorf, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Continuation-in-part of Ser. No. 656,136, July 26, 1967, Pat. No. 3,637,495. This application Nov. 10, 1970, Ser. No. 88,486
Claims priority, application Germany, Aug. 1, 1969, H 60 12 48; May 23, 1967, H 62 81 68
Int. Cl. D06m *13/40, 13/46*
U.S. Cl. 252—8.8 **4 Claims**

An antimicrobial and softening composition for laundry use

comprises a water-soluble heavy metal-free non-oxidizing antimicrobial agent, and a glycamide of the formula:



wherein R_1 and R_2 are alkyl groups having a total of 23 to 39 carbon atoms, and n is 3 or 4, preferably 4.

3,764,532

SELF-LUBRICATING SOLID COMPOSITIONS

Scott Lewis Fisher, Williamsville, N.Y., and Morris Jay Parker, Houston, Tex., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 608,352, Jan. 10, 1967, abandoned. This application Sept. 21, 1970, Ser. No. 74,215
Int. Cl. C10m *7/48, 7/28*
U.S. Cl. 252—12 **6 Claims**

Self-lubricating solid compositions for use in gas compressors and the like, comprising polytetrafluoroethylene filled with lead and glass additives wherein the glass to lead volume ratio exceeds 3:1.

3,764,533

OIL SOLUBLE DIALKARYL SULFONATE COMPOSITIONS

Mack W. Hunt, and Roy C. Sias, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 529,284, Feb. 22, 1966, abandoned, which is a continuation-in-part of Ser. No. 446,661, April 8, 1965, abandoned. This application Aug. 7, 1970, Ser. No. 62,211
Int. Cl. C10m *1/40, 3/34*
U.S. Cl. 252—33 **23 Claims**

This invention relates to novel overbased and neutral oil soluble metal dialkaryl hydrocarbon sulfonate compositions possessing low viscosity and outstanding rust inhibiting as well as water demulsification properties. Also, this invention relates to oil soluble metal dialkaryl sulfonate compounds in which the alkyl substituents contain from eight to 18 carbon atoms and are bonded to the aryl nucleus through a secondary carbon atom. In one aspect, the present invention concerns metal dialkaryl sulfonate compositions containing at least 20 weight percent metal dialkaryl sulfonate compounds in which the alkyl substituents are straight chain and contain from about eight to about 18 carbsn atoms, the aryl moiety being selected from the group consisting of benzene, toluene, xylene, naphthalene and mixtures thereof. In another aspect, the present invention concerns oil soluble metal sulfonate compositions containing metal dialkaryl sulfonate compounds in which one of the alkyl substituents is a straight chain group and the other is a branched chain group, the aryl moiety being selected from the group consisting of benzene, toluene, xylene, naphthalene, and mixtures thereof. In still another aspect, this invention concerns oil soluble metal hydrocarbon sulfonate compositions containing a major amount of metal dialkaryl sulfonate compounds in which the alkyl substituents are straight chain and contain from about eight to about 18 carbon atoms, the aryl moiety being selected from the group consisting of benzene, toluene and xylene, and a minor amount of tetrahydronaphthalene sulfonate compounds, said conpositions being derived from hydrocarbon compositions prepared by the disproportionation of mono-n-alkaryl compounds using aluminum chloride and/or aluminum bromide as the catalyst.

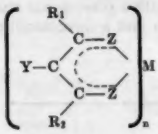
3,764,534

NEW LUBRICATING COMPOSITIONS

Claude Blejean, Paris, and Bernard Bourdoncle, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Filed Feb. 16, 1971, Ser. No. 115,811
Claims priority, application France, Feb. 23, 1970, 7006455
Int. Cl. C10m *1/38*
U.S. Cl. 252—42.7 **6 Claims**

A lubricating composition comprising a lubricating oil and at least one thioorganometallic complex of the general formula:



in which M is selected from the transition metals and zinc, cadmium, tin, lead, antimony and bismuth; n is the oxidation degree of M, R_1 and R_2 are each a monovalent hydrocarbon radical having one to 20 carbon atoms and 0 to 3 heteroatoms selected from the group consisting of halogen, oxygen, sulfur and nitrogen; Y is selected from the hydrogen atom and the radicals R′, R′O, R′S and R′CO in which R′ is a hydrocarbon radical of one to 20 carbon atoms; Y and R_1 or R_2 may form a divalent hydrocarbon radical containing one to 20 carbon atoms and 0–3 heteroatoms selected from oxygen, sulfur and nitrogen; and each atom Z is oxygen or sulfur, at least one of the $2n$ atoms Z being sulfur.

3,764,535

TETRA-T-DODECYLAMARCAPTO-P-BENZOQUINONE

Raymond C. Schlicht, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Filed May 25, 1972, Ser. No. 256,855
Int. Cl. C10m *1/42*
U.S. Cl. 252—48.2 **2 Claims**

A lubricating oil composition of improved corrosion, wear and oxidation inhibiting properties consisting of a hydrocarbon lubricating oil composition comprising a major amount of hydrocarbon lubricating oil and between about 0.1 and 10 wt. percent of tetra-t-dodecylmercapto-p-benzoquinone and optionally including additional automative lubricating oil additives such as VI improvers, detergent-dispersants, anti-foamants and supplementary corrosion, wear and oxidation inhibitors.

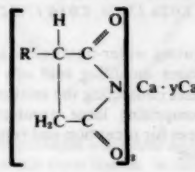
3,764,536

OVERBASED CALCIUM SALTS OF ALKENYLSUCCINIMIDE

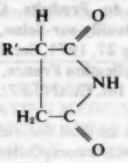
Walter W. Hellmuth, Beacon, and Elmer E. Schallenberg, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,370
Int. Cl. C10m *1/20*
U.S. Cl. 252—49.7 **9 Claims**

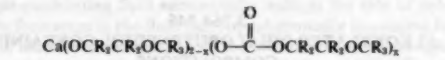
An improved dispersant and rust inhibiting additive for automotive lubricating oils comprising overbased calcium salt of alkenylsuccinimide characterized by the formula:



where R' is alkenyl of from 30 to 300 carbons and *y* is an integer of from about 0.1 to 18, said overbased calcium salt prepared by contacting alkenylsuccinimide of the formula:



where R' is as heretofore defined with a CO_2 blown calcium 2-alkoxyalkoxide complex characterized by the formula:



where R is H, CH_3 and/or C_2H_5 and *x* is from 0.5 to 1.5 at a temperature of between about 50° and 180°C. in the presence of water and preferably in the presence of an inert liquid diluent.

3,764,537

SYNTHETIC PETROLATUM COMPOSITIONS

David M. Macleod, 835 Lakeshore Rd., Sarnia, Ontario, Canada

Division of Ser. No. 16,980, March 5, 1970, Pat. No. 3,642,635. This application Nov. 1, 1971, Ser. No. 194,492
Int. Cl. C10m *1/28*
U.S. Cl. 252—56 R **8 Claims**

Petrolatum-like products are prepared by combining a distillate lubricating oil, a slack wax derived from a distillate lubricating oil and a wax crystal modifying additive having an intrinsic viscosity in the range of about 0.05 to about 0.3 dl/g and selected from the group consisting of amorphous polyethylene, amorphous polypropylene, copolymers thereof, halogenated homopolymers and copolymers thereof, and copolymers of 3 to 40 molar proportions of ethylene per molar proportion of an ethylenically unsaturated monomer having the general formula:

wherein X is selected from the group consisting of hydrogen, halogens and C_1 to C_5 alkyl groups; Y is selected from the group consisting of —OOCR, —OOCR and —COR groups; Z is selected from the group consisting of —COOR and —R; and R is selected from the group consisting of hydrogen and C_1 to C_{10} alkyl groups.

3,764,538

ELECTROSCOPIC PRINTING POWDER

Loren E. Shelffo, Palatine, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation of Ser. No. 692,732, Dec. 22, 1967, abandoned, which is a continuation-in-part of Ser. No. 357,743, April 6, 1964, abandoned. This application Mar. 10, 1971, Ser. No. 123,065
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **15 Claims**

A developer mix for use in electrostatic printing to develop latent images, including charged and uncharged areas of an image bearing sheet said developer mix comprising separate granular carrier particles, and a developer powder comprising a coloring agent and a resin having a triboelectric relationship of opposite polarity with respect to said carrier granules, said resin comprising a blend of resins in which the physical properties of the blend are distinct with respect to the physical properties of the resin components which are heat blended together, the principal resin being a polyamide resin which represents the infrangible resin component, and the completed resin being reduced to a melt point within the range of 8°, whereby developed images of substantially improved black density may be formed over extended operating periods.

3,764,539

FLEXIBLE FERRITE PERMANENT MAGNET AND METHODS FOR ITS MANUFACTURE

Philip A. Cochardt; Alexander R. Cochardt, and Alexander W. Cochardt, all of Export, Pa., assignors to Community Building Association of Washington, Indiana, Inc., Washington, Ind.

Filed Oct. 14, 1970, Ser. No. 80,580
Int. Cl. H01f *1/117*
U.S. Cl. 252—62.54 **12 Claims**

A flexible permanent magnet is described that contains single-crystalline ferrite particles embedded in an elastomeric binder. The ferrite particle size is much larger than that of the ferrites in the prior-art flexible magnets which results in greatly improved magnetic and mechanical properties. The large-size, single-crystalline ferrite particles are obtained by preparing a highly oriented, fully sintered hexaferrite and by pulverizing the hexaferrite into a relatively coarse powder.

3,764,540

MAGNETOFLUIDS AND THEIR MANUFACTURE

Sanaa E. Khalafalla, and George W. Reimers, both of Minneapolis, Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 28, 1971, Ser. No. 148,206
Int. Cl. H01f *1/28*
U.S. Cl. 252—62.55 **9 Claims**

Magnetofluids, comprising a stable, colloidal suspension of magnetite and elemental iron, are produced by comminuting a nonmagnetic or antimagnetic precursor compound to colloidal size, dispersing the precursor in a carrier fluid and thereafter converting the precursor to ferromagnetic forms while in stable suspension.

3,764,541

DETERGENT INTERMEDIATE AND PROCESS THEREFOR

Thomas M. Kaneko, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 23, 1971, Ser. No. 211,722
Int. Cl. C11d *3/02*
U.S. Cl. 252—89 **4 Claims**

A detergent intermediate for use in phosphate-free detergent formulations is provided by absorbing a liquid surfactant onto a coarse light soda ash utilizing a pan pelletizer to effectuate absorption.

3,764,542

ENZYME GRANULATION PROCESS

Remigio Natali, and Guiseppe Giombini, both of Rome, Italy, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 38,560, May 18, 1970, abandoned. This application Mar. 28, 1972, Ser. No. 238,991
Int. Cl. C11d 3/06, 7/42, 11/00
U.S. Cl. 252—135 3 Claims

A process for producing granular product containing enzyme and builder salt, such as sodium tripolyphosphate, which comprises granulating an enzyme preparation and hydratable builder salt in the presence of ice particles at temperatures below about 30°C. to produce a granule wherein the hydratable builder salt is substantially completely hydrated and thermal degradation of the enzyme is minimized.

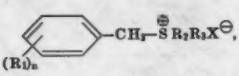
3,764,543

SULFONIUM COMPOUND AS A CORROSION INHIBITOR IN AQUEOUS ACID

Wayne W. Frenier, and William J. Settineri, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 23, 1971, Ser. No. 118,175
Int. Cl. C11d 7/34; C23g 1/06
U.S. Cl. 252—151 16 Claims

Alkylbenzyldialkysulfonium salts are discovered to be useful corrosion inhibitors in aqueous acid solutions. Said sulfonium salts have the formula



wherein n is 1 or 2; R_1 is an alkyl radical with the aggregate carbon content of R_1 being from 6 to about 24 carbon atoms; R_2 and R_3 are alkyl radicals and X^- is an anion. The novel inhibitors are useful at very low concentrations even in the presence of ferric ions. E.g., an aqueous solution of ethylenediaminetetracetic acid as the ammonium salt at pH 5 and initially 3×10^{-4}M. in p-dodecylbenzyldimethylsulfonium chloride is illustrative of the inhibited solutions disclosed.

3,764,544

SPOT REMOVER FOR WEARING APPAREL

Leon L. Haworth, 7160 Galli Ct. No. 4, San Jose, Calif.

Continuation-in-part of Ser. No. 59,681, July 30, 1970, abandoned. This application Aug. 6, 1971, Ser. No. 169,815
Int. Cl. C11d 3/44
U.S. Cl. 252—170 4 Claims

A cleansing solution for removing spots from cloth and the like comprising the following ingredients:

a detergent of polyethylene glycol ethers such as Union Carbide 15-5-9, a 9 mole ethylene oxide adduct of a secondary alcohol in the range of 10–30 percent by volume;

an acetate solvent of the group including amyl acetate, ethyl acetate, hexyl acetate and butyl acetate in the range of 10–30 percent by volume;

a suitable coupling agent for stability and as a clarifier, such as a glycol ether solvent, for example, Dowanol EB, in the range of 2 ½–10 percent by volume; and

water in the range of 30–80 percent by volume.

3,764,545

TRICHLOROETHYLENE EMULSION BASED CLEANING COMPOSITION

Leon Aguadisch, Sevres, and Michel Mistou, Digne, both of France, assignors to Produits Chimiques PECHINEY-SAINT GOBAIN, Neuilly-sur-Seine, France

Filed May 27, 1971, Ser. No. 147,612
Claims priority, application France, May 29, 1970, 7019739
Int. Cl. C11d 7/52
U.S. Cl. 252—171 10 Claims

A composition and method for cleaning parts wherein the parts are contacted with a composition formulated to contain trichloroethylene, water, one or more oxyethylene alkyl phenol phosphate anionic emulsifiers and an acid salt derived from an alkenyl succinic acid or anhydride.

3,764,546

ALKOXYLATED DIHALOBUTENEDIOL CONTAINING COMPOSITIONS

Joseph Feltzin, and Erich Kuehn, both of Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Filed Mar. 10, 1971, Ser. No. 123,074
Int. Cl. C08f 21/00, 29/14
U.S. Cl. 252—182 5 Claims

Polyol compositions are disclosed which comprise a mixture of alkoxylated dihalobutenediol and a second polyhydroxy compound wherein the hydroxyl number of said polyol composition is from about 200 to 700. A process for preparing the polyol composition and flame-retardant polyurethane foams prepared from said polyol compositions are also disclosed.

3,764,547

SLURRIES OF SOLID CARBONIFEROUS FUELS

Warren G. Schlinger, Pasadena; William L. Slater; Roger M. Dille, both of La Habra, and Joseph P. Tassoney, Whittier, all of Calif., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 787,190, Dec. 26, 1968, Pat. No. 3,620,698. This application Jan. 28, 1971, Ser. No. 110,619
Int. Cl. C10j 3/00; C10b 55/02
U.S. Cl. 252—184 1 Claim

Production of synthesis gas from a slurry of particulate solid carboniferous fuels, e.g., petroleum coke, coke from bituminous coal, coal, oil shale, tar sands, pitch, or mixtures of these materials in water or in a hydrocarbon liquid fuel. The amount of particulate solid carboniferous fuel in a pumpable slurry may be increased to 75 wt. percent and the particle size of the solid fuel may be increased to pass through a 12 mesh screen by the addition of 2 to 10 wt. percent of soot as produced, for example, by the partial oxidation of crude oil. The slurry at a relatively low velocity in the range of 5 to 50 feet per second is mixed with a stream of oxidizing gas at a relatively high velocity in the range of 200 feet per second to sonic velocity at the burner tip to form an atomized dispersion of water, hydrocarbon liquid fuel, oxidizing gas, and solid carboniferous fuel. Under synthesis gas generating conditions, the atomized dispersion is reacted to produce a gaseous mixture of hydrogen and carbon monoxide. By this process, pumpable slurry feeds of low cost solid carboniferous fuels may be gasified in a synthesis gas generator without being preheated.

3,764,548

OXYGEN SCAVENGER AND USE THEREOF

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Filed Sept. 13, 1971, Ser. No. 180,091
Int. Cl. C23f 15/00, 11/18
U.S. Cl. 252—188 10 Claims

An oxygen scavenger composition characterized by (1) a catalyst comprising an anthraquinone disulfonic acid or salt

thereof and a vanadate salt such as sodium vanadate and (2) a reducing agent such as H_2S or hydrazine; and processes for scavenging, with said composition, oxygen from corrosive media including oxygen or air wherein said oxygen or air causes said media to be corrosive or to increase the corrosiveness of said media.

3,764,549

LIGHT-MODULATING MEDIUM FOR IMAGE PROJECTION APPARATUS

David A. Orser, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 11, 1973, Ser. No. 322,639
Int. Cl. G01b *5/24*
U.S. Cl. 252—300 7 Claims

Addition of small amounts of substituted anthraquinones to a light-modulating fluid substantially reduces the rate of substrate formation in the fluid thereby substantially increasing its useful lifetime and consequently the useful lifetime of the light valve of the projection apparatus in which the modified fluid is used as the light-modulating medium.

3,764,550

PROCESS FOR THE FORMATION OF METAL CARBIDE AND METAL CARBIDE PLUS CARBON MICROSPHERES

Jacob Block, Rockville, Md.; Robert Donald Shoup, Painted Post, N.Y.; Norman Raymond Laine, and Leonard Vincent Triggiani, both of Rockville, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed June 9, 1969, Ser. No. 831,710
Int. Cl. C01g *43/00*
U.S. Cl. 252—301.1 R 7 Claims

A process for preparing metal carbide and metal carbide plus carbon microspheres by controlled decomposition of ion exchange resin beads that contain metals followed by conversion to the metal carbide or metal carbide plus carbon.

3,764,551

METHOD OF MANUFACTURE OF SINTERED HYPOSTOICHIOMETRIC OXIDES

Guy Dean, Suresnes, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed June 16, 1970, Ser. No. 46,795
Int. Cl. C01g *43/02*
U.S. Cl. 252—301.1 R 5 Claims

A method of manufacture of sintered sub-stoichiometric oxides resulting from oxygen deficiency comprising the steps of sintering a mixture of powders of oxide (or oxides) and of carbon in suitable proportions for obtaining the desired sub-stoichiometry by elimination of oxygen in the form of carbon monoxide followed by grinding of the sintered product and a second sintering of the ground product.

3,764,552

METHOD FOR STORING RADIOACTIVE COMBUSTIBLE WASTE

Herschel W. Godbee, Oak Ridge, and Roy C. Lovelace, Lenoir City, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 14, 1972, Ser. No. 262,802
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 W 10 Claims

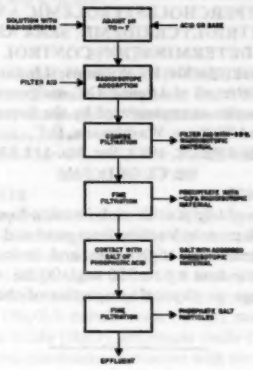
A method for preventing pressure buildup in sealed containers which contain radioactively contaminated combustible waste material by adding an oxide getter material to the container so as to chemically bind sorbed water and combustion product gases.

3,764,553

REMOVAL OF RADIOISOTOPES FROM WASTE SOLUTIONS

Harold W. Kirby, Dayton, Ohio, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 18, 1972, Ser. No. 281,665
Int. Cl. C01g *56/00*
U.S. Cl. 252—301.1 R 3 Claims



The invention comprises removing radioisotopes from waste liquids or solutions by passing these through filters and through a column containing a suitable salt of phosphoric acid.

3,764,554

LUMINESCENT ALKALINE EARTH SULFATE PHOSPHOR AND METHOD OF PREPARATION

Roelof Egbert Schuil, Emmasingel, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,157
Claims priority, application Netherlands, Nov. 17, 1969, 6917280
Int. Cl. C09k *1/22, 1/04*
U.S. Cl. 252—301.45 4 Claims

An ultraviolet bivalent europium activated alkaline earth sulfate phosphor useful for low-pressure mercury vapor discharge lamps and cathode-ray tubes.

3,764,555

PROCESS OF PREPARING POROSITY-FREE CALCIUM HALOPHOSPHATE PHOSPHORS

Thomas C. Vincent, Mayfield Heights; Arnold Friedman, South Euclid, and Robert L. Hickok, Richmond Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 731,594, May 23, 1968, abandoned. This application Oct. 15, 1970, Ser. No. 90,232
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.6 P 2 Claims

A process for the production of relatively porosity-free calcium halophosphate phosphors activated such as with antimony and manganese. The process involves using either calcium pyrophosphate, $Ca_2P_2O_7$, or tribasic calcium orthophosphate, $Ca_3(PO_4)_2$, as the phosphate ingredient in a batch of ingredients containing the constituent elements of the desired phosphor. The batch is fired at an elevated temperature for a time sufficient to produce the phosphor. The extent of freedom from porosity of the phosphor can be characterized by the slope of a line obtained by plotting a graph of $\log I/I_o$ versus mg/mm^2 wherein I/I_o is the ratio of the intensity of light transmitted in a forward direction through a sample of

the phosphor in particulate form suspended in a liquid of essentially matching index of refraction to the intensity of the light transmitted without the phosphor, and mg/mm² is the concentration of the phosphor measured in milligrams of phosphor per square millimeter of light beam. A slope less negative than −2.7 mm²/mg is within the invention.

3,764,556

ALCOHOLIC PRECIPITATION AND 1000X CENTRIFUGATION PREPARATION OF HYPERCHOLESTEROLEMIC AND HYPERTRIGLYCERIDEMIC SERA AS LIPID DETERMINATION CONTROL

Myron Kuchmak; Jackie H. Williams; Linnard Taylor, and Robert F. Witter, all of Atlanta, Ga., assignors to The United States of America as represented by the Secretary of Health Education and Welfare, Washington, D.C.

Filed Feb. 2, 1971, Ser. No. 111,839

Int. Cl. G01n *3/16*

U.S. Cl. 252—408 **6 Claims**

The isolation of triglyceride-rich fraction from egg yolk and cholesterol-rich protein fraction from outdated human plasma in order to enhance the triglyceride and cholesterol levels of bovine and horse sera up to 350 mg/100 ml. without an appreciable change in physical properties of the sera are disclosed.

3,764,557

CATALYST ACTIVATION PROCESS AND ACTIVATED CATALYST

Harris E. Kluksdahl, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 28,807, April 15, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 7,061, Jan. 30, 1970, abandoned, and Ser. No. 8,663, Feb. 4, 1970, which is a continuation-in-part of Ser. No. 865,010, Oct. 9, 1969, abandoned. This application Jan. 11, 1971, Ser. No. 105,461

Int. Cl. B01j *11/14*

U.S. Cl. 252—415 **8 Claims**

A process for activating a catalytic composition including a porous inorganic oxide carrier, a platinum group component and a tin component, comprising: reacting the catalytic composition with an activating gas including oxygen at a temperature within the range from about 500°F. to about 1300°F. for at least about 0.5 hour. The activating gas preferably includes a halogenating component. The activating gas is preferably slightly moist and is preferably flowed through the catalytic composition. The catalytic composition may comprise a fresh catalytic composition, a regenerated catalytic composition, or a mixture thereof. A preferred activated catalytic composition comprises an alumina carrier, 0.01 to 3 weight percent platinum, 0.01 to 8 weight percent tin, and 0.01 to 3 weight percent halide. It may also contain 0.01 to 3 weight percent rhenium. Another preferred activated catalytic composition comprises an alumina carrier, 0.01 to 3 weight percent platinum, 0.01 to 5 weight percent tin, 0.001 to 1 weight percent iridium and 0.01 to 3 weight percent halide. Also covers the resulting activated catalytic compositions.

3,764,558

CONSTANT LOW OXYGEN CONCENTRATION GAS REGENERATION OF REFINING CATALYSTS

Harold F. Tse, Bala Cynwyd, and Walter H. Seltzer, West Chester, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 24, 1971, Ser. No. 156,571

Int. Cl. B01j *11/68, 11/04*

U.S. Cl. 252—419 **1 Claim**

Regeneration of highly coked hydrogenation catalysts using an inert gas and a constant 0.2 to 0.4 percent oxygen at from 775°F. to 850°F.

3,764,559

DETERGENT COMPOSITIONS

William G. Mizuno; Thomas E. Brunelle, both of St. Paul; Larry M. Rue, Grove Heights, and Samuel B. Crecelius, St. Paul, all of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 782,569, Dec. 10, 1968, abandoned. This application Feb. 5, 1971, Ser. No. 112,856

Int. Cl. C11d *7/54*

U.S. Cl. 252—99 **3 Claims**

Detergent compositions containing maleic anhydride polymers.

3,764,560

BENZOIN ETHER COMPOSITIONS

Pieter Elisa Vogel, Epse, and John William Broekhuis, Twello, both of Netherlands, assignors to Koninklijke Industrieele Maatschappij Noury and Van Der Lande N.V., Devanter, Netherlands

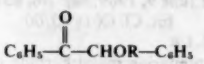
Filed Mar. 19, 1971, Ser. No. 126,312

Claims priority, application Great Britain, Mar. 26, 1970, 14,682/70

Int. Cl. C07c *49/82*

U.S. Cl. 252—426 **4 Claims**

A composition is disclosed which is liquid at a temperature from 0°C. to room temperature and which comprises at least two compounds which, individually, are solid at such temperature and which have the general formula



wherein R represents a straight or branched primary, secondary or tertiary alkyl radical having up to 6 carbon atoms in the main chain, at least a major portion of the composition comprising at least one compound wherein the alkyl radical has 3 – 6 carbon atoms in the main chain.

3,764,561

ACTIVATED CARBON FROM ADMIXTURE OF COKING COAL AND INORGANIC POTASSIUM SALTS

Hiroshi Nishino, Nishinomiya; Hakaru Kubo, Takatsuki, and Hirohiko Ichikawa, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Continuation-in-part of Ser. No. 37,441, May 15, 1970, abandoned, which is a continuation of Ser. No. 663,220, Aug. 25, 1967, abandoned. This application Mar. 9, 1971, Ser. No. 122,548

Int. Cl. C01b *31/08, 31/12;* B01j *11/06*

U.S. Cl. 252—447 **6 Claims**

Coking coal is admixed with a small but critical amount of inorganic potassium salt, followed by subjecting the mixture to a carbonization to produce a coke which is convertible to activated carbon showing a strong absorption capacity in gas phase.

3,764,562

HYDROCARBON CONVERSION CATALYST

James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 834,067, June 17, 1969, abandoned. This application Apr. 12, 1971, Ser. No. 133,401

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 R **6 Claims**

A hydrocarbon conversion catalyst consisting essentially of: (a) a gel selected from silica-alumina gel, silica-alumina-titania gel and silica-alumina-zirconia gel, and (b) at least one

hydrogenating component selected from Group VIII metals and compounds thereof and combinations of Group VIII metals and compounds thereof with tin and compounds thereof, (c) a hydrogenating component selected from manganese and compounds thereof; and processes using said catalyst.

3,764,563

METHOD OF PREPARING GRANULATED ZEOLITE CATALYSTS AND SORBENTS

Khabib Minachevich Minachev; Evgeny Sergeevich Mortikov, both of Moscow; Alexandr Semenovich Leontiev, Salavat Bashkirskoi Assr; Alexei Alexeevich Masloboev-Shvedov, and Nikolai Fedorovich Kononov, both of Moscow, all of U.S.S.R.

Filed Mar. 30, 1972, Ser. No. 239,804
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **18 Claims**

A method of preparing granulated zeolite catalysts and sorbents, consisting in that the starting zeolite is shaped into granules. The shaping can be effected either in the presence of a binder taken in a quantity not higher than 30 per cent by weight of the zeolite or without a binder. The resulting granules are treated with a polar liquid at a temperature of 150° to 300°C under a pressure of 80 to 120 atm, dried at a temperature of 100° to 120°C and calcined at a temperature of 380° to 550°C. In case the starting zeolite is used in the Na-form, cation exchange can be effected. From technological considerations it is recommendable that the zeolite granules directly after the shaping thereof be dried at a temperature of 100° to 120°C and calcined at a temperature of 380° to 550°C. The present method allows a considerable increase in the strength of granulated zeolite catalysts and sorbents and, hence, in their efficiency. The mechanical strength of the catalysts and sorbents thus prepared becomes 3 to 10 times higher than that of zeolite catalysts prepared without the treatment of the granules with a polar liquid. No changes are observed in the sorption capacity and catalytic activity of the zeolites.

3,764,564

CATALYST FOR CONTROL OF AUTOMOBILE EXHAUST EMISSIONS

James Michael Maselli, Ellicott City; Michael Vance Ernest, Baltimore, and Gwan Kim, Columbia, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed May 11, 1972, Ser. No. 252,363
Int. Cl. B01j *11/06, 11/32*
U.S. Cl. 252—465 **4 Claims**

A process for preparing an automotive exhaust catalyst capable of converting the carbon monoxide and hydrocarbons in automobile exhaust gas to carbon dioxide and water, characterized by high activity and exceptional resistance to shrinkage in use. The catalyst is prepared by impregnating or cladding nodules of a support with certain transition metal oxides. One of these oxides is impregnated into or clad onto the support and the support is calcined prior to addition of the other catalytic components to the nodules.

3,764,565

CATALYST FOR HYDROCRACKING A RESID HYDROCARBON

Robert B. Jacobs, Homewood, and Gerald B. Holkstra, South Holland, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 17,454, March 9, 1970, Pat. No. 3,674,680, which is a continuation-in-part of Ser. No. 598,046, Nov. 30, 1966, abandoned. This application Apr. 21, 1971, Ser. No. 136,215
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—470 **7 Claims**

A resid hydrocarbon is converted to lower boiling hydrocarbons and/or desulfurized by contacting, in the presence of hydrogen, said resid with a bed of catalyst particles, substantially all of said particles having a surface-to-volume ratio ranging between about 100 and about 250 l/inches, and wherein substantially all points within each of said particles are less than about 0.015 inch from the particle's surface. When one of these particles is circumscribed by a right circular cylinder having an altitude equal to that of the particle, the particle contacts the sidewall of the cylinder at at least three elements and occupies from about 70 to about 90 percent of the cylinder's volume. Preferred particle shapes are cloverleaf, cross, ring and C-shape.

3,764,566

VOLTAGE NONLINEAR RESISTORS

Michio Matsuoka; Takeshi Masuyama, and Yoshio Iida, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 24, 1972, Ser. No. 237,675
Int. Cl. H01c *7/12*
U.S. Cl. 252—518 **6 Claims**

A voltage dependent resistor in a bulk type comprising a sintered body consisting essentially of, as a major part, zinc oxide (ZnO) and as an additive, 0.05 to 20.0 mole percent of silicon dioxide (SiO_2) and 0.05 to 10.0 mole percent, in total, of at least one member selected from the group consisting of bismuth oxide (Bi_2O_3), cobalt oxide (CoO), manganese oxide (MnO), barium oxide (BaO), strontium oxide (SrO), and lead oxide (PbO), and electrodes in contact with the body.

3,764,567

PERFUME COMPOSITION

Seiji Wakayama, Sapporo, and Akira Komatsu, Tokyo, both of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1971, Ser. No. 174,493
Claims priority, application Japan, Aug. 29, 1970, 45/75838
Int. Cl. C11b *9/00*
U.S. Cl. 252—522 **3 Claims**

A new compound, 2-(1′-hydroxymethyl-ethyl)-5-methyl-5-vinyl-tetrahydrofuran has been discovered in an essential oil of a lilac flower. This compound consists of four steroisomers and is useful as an ingredient to be incorporated in floral perfumes. This compound is obtained by selectively reducing the formyl radical of 2-(1′ formylethyl)-5-methyl-5-vinyl-tetrahydrofuran.

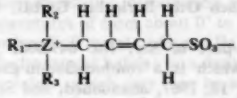
3,764,568

UNSATURATED ZWITTERIONIC SURFACE ACTIVE COMPOSITION

Melvin A. Barbera, Mt. Healthy, Ohio, assignor to Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 24,330, March 31, 1970, Pat. No. 3,668,240. This application Apr. 28, 1972, Ser. No. 248,762
Int. Cl. C11d *1/84, 3/06*
U.S. Cl. 252—526 **2 Claims**

Zwitterionic surface active compounds are provided having the following formula:



wherein R_1 represents an unsaturated or saturated aliphatic group having six to 24 carbon atoms, R_2 and R_3 each represent an alkyl group having one to six carbon atoms, and Z represents nitrogen or phosphorus.

These compounds have valuable surface active properties that make them especially useful as detergent compounds.

3,764,569

DETERGENT COMPOSITION

Wahid R. Ali, and William R. Bryan, both of Pointe-a-Pierre, Trinidad, assignors to Texaco Trinidad, Inc., Pointe-a-Pierre, Trinidad

Filed Aug. 5, 1971, Ser. No. 169,505
Int. Cl. C11d *1/14*
U.S. Cl. 252—554 5 Claims

Primary and secondary alkylsulfonates with carbon numbers lower than those which afford optimum detergency are used as hydrotropes in detergent formulations. These alkylsulfonates are linear, and have a carbon content ranging from C_7 to C_8 inclusive.

3,764,570

POLYURETHANE FOAMS FROM PHOSPHOROUS CONTAINING SUGAR POLYOLS

John S. Heckles, and Edwin J. Quinn, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 822,025, May 5, 1969, Pat. No. 3,694,430. This application June 22, 1972, Ser. No. 265,307
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AR 1 Claim

Phosphono-substituted carboxylic acid esters are ester interchanged with sugar polyols. The resulting phosphorus-containing ester can be reacted in conventional manner with conventional polyisocyanates to form self-extinguishing or flame-retardant polyurethane foams having good stability against hydrolysis.

3,764,571

ORGANOTIN STABILIZER SYSTEMS

Thomas C. Jennings, Lyndhurst, and Charles W. Fletcher, Jr., East Cleveland, both of Ohio, assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed Feb. 18, 1971, Ser. No. 116,671
Int. Cl. C08f *45/54*
U.S. Cl. 260—23 XA 18 Claims

A novel composition which comprises:

a. an organotin sulfur-containing compound, for example, organotin mercaptides, organotin mercaptoacids, organotin mercaptoacid esters, organotin sulfides, organo thiostannoic acids and the like,

b. an alkali or alkaline earth metal salt of an organic acid, such as Group I or Group II-a Periodic Table metal salts of aliphatic monocarboxylic acids, and

c. an alkali or alkaline earth metal base such as 1) Group I or Group II-a Periodic Table metal oxides, hydroxides or carbonates and 2) organic over-based complexes of Group I or II-a metal bases.

These novel compositions have been found to extend the heat stability of vinyl halide resins in a remarkably effective manner even when used in total proportions and ratios of ingredients varying over a broad range.

3,764,572

PROCESS OF GRANULATING POLYMERIC MATERIALS

Christian Rosenthal, Munich, Germany, assignor to Chemische Werke Munchen Otto Barlocher GmbH, Munchen, Germany

Continuation-in-part of Ser. No. 649,088, June 26, 1967, abandoned, which is a continuation-in-part of Ser. Nos. 609,712, Jan. 10, 1967, abandoned, and Ser. No. 631,885, April 19, 1967, abandoned, said Ser. No. 631,885, is a continuation-in-part of Ser. No. 609,712. This application June 10, 1970, Ser. No. 57,008. The portion of the term of this patent subsequent to May 4, 1988 has been disclaimed.
Int. Cl. C08f *19/14*
U.S. Cl. 260—23 XA 8 Claims

Granulates of halogen-containing polymers are formed by dissolving a minor portion of the polymer at an elevated temperature in a softener or solvent or mixture of both and suspending the major portion of the polymer in water whereupon the solution of the polymer is stirred into the aqueous suspension and slowly heated upon continued stirring. At least part of the modifiers required in the final products are stirred into the aqueous polymer suspension in the form of a solution or dispersion of the modifiers in a softener or solvent or a mixture of softener and solvents.

3,764,573

PREPARATION OF PREPREGS

Richard J. Jablonski, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,248
Int. Cl. C08g *51/34*, *51/32*
U.S. Cl. 260—30.4 N 10 Claims

Resin-bonded composite materials having improved high temperature characteristics are provided by utilizing theta solvents for the resin.

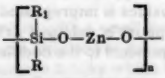
3,764,574

ZINC-SILOXANE POLYMER AND COATING AND METHOD FOR MAKING THE SAME

Burton S. Marks, Palto Alto, Calif., and Peter J. Chiesa, Jr., West Grove, Pa., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Division of Ser. No. 786,816, Dec. 12, 1968, which is a continuation-in-part of Ser. No. 551,398, May 19, 1966, abandoned. This application Aug. 13, 1970, Ser. No. 63,644
Int. Cl. C08g *51/50*
U.S. Cl. 260—30.6 SB 15 Claims

A zincphenylsiloxane polymer made by reacting a zinc salt such as anhydrous zinc acetate with a difunctional diphenylsiloxane monomer such as diphenyldialkoxysilane or with a trifunctional or polyfunctional silane polymer, such as the anhydrous hydrolysis and alcoholysis product of phenyltrichlorosilane, using heat sufficient to insure that reaction occurs (about 200°C) which can be noted by the distillation of alkyl acetate, a by-product of the reaction. The functionally of the silane monomer in the above difunctional polymer is 2, in that it reacts through its two alcoholate groups to form the ordered-sequence copolymer polyzincphenylsiloxane having the repeated bonding:



where R_1 is a phenyl group and n is greater than 2. The zincphenylsiloxane copolymers prepared from dimers, trimers, tetramers, pentamers, and hexamers of the anhydrous hydrolysis and alcoholysis product of phenyltrichlorosilane also have all the zinc ions in between (O – Si – O) groups, but need not be strictly in ordered sequence if there are additional interspersed (O – Si – O) groups. These polymeric reactants all have a functionality greater than 2 when reacting with anhydrous zinc acetate. The zincphenylsioloxane polymer may thereafter be blended with a non-migrating plasticizer and coreactant silicone monomer and cured.

3,764,575

SALT CORE CONTAINING SYNTHETIC RESIN AND WATER-GLASS AS BINDERS

Kurt Anderko, Heilbronn; Manfred Stark, Neckarsulm, and Adolf Diez, Heilbronn, all of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Germany

Filed July 6, 1970, Ser. No. 52,716

Claims priority, application Germany, July 9, 1969, P 19 34 787.6

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 R 8 Claims

In the manufacture of a casting having a cavity, wherein a water-soluble salt core is suspended in a mold, molten material is poured into said mold about said core, the molten material is allowed to harden to the desired casting, and the core is washed away with water to leave a hollow casting, the improvement which comprises employing as said core one comprising a water-soluble salt, about 5 to 20 percent by weight of water-glass and about 2 to 15 percent by weight of a synthetic resin as binder. The invention also extends to the core and the process by which it is produced.

3,764,576

MOLDABLE POLYBUTYLENE TEREPHTHALATE COMPOSITIONS CONTAINING ACICULAR CALCIUM METASILICATE

Robert Victor Russo, Brooklyn, N.Y., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 210,190

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R 11 Claims

Filled thermoplastic compositions comprising linear crystallizable polybutylene terephthalate with an I.V. of from about 0.2 to 1.5 deciliters/gm and acicular calcium metasilicate (calcium silicate).

Articles molded from the thermoplastic compositions possess highly glossed surfaces which are retained at high temperatures; have superior arc resistance which increases with increasing silicate concentration; and are essentially warpage-free even under asymmetrically gated conditions.

The thermoplastic compositions and articles molded therefrom can advantageously contain up to about 60 weight percent based on the total molding composition of reinforcing agents, such as asbestos fibers, glass fibers, etc.

3,764,577

FLAME-RETARDANT, POLYURETHANE COATING COMPOSITIONS

Joseph P. Burns; Joseph Feltzin, and Erich Koehn, all of Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Division of Ser. No. 782,409, Dec. 9, 1968, Pat. No. 3,639,294. This application Aug. 24, 1970, Ser. No. 66,596

Int. Cl. C08g *22/14*

U.S. Cl. 260—45.7 P 11 Claims

Polyurethane coating compositions are provided which, after application to substrates, yield transparent coatings having superior flame-retardancy and resiliency. The coating compositions comprise a solvent and a polyurethane reaction product of halogen containing polyol, phosphorus containing product, and organic polyisocyanate.

3,764,578

STABILIZATION OF POLYMERCAPTANS

Douglas H. Strong, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 880,415, Nov. 26, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,578

Int. Cl. C08d *7/10, 11/04*

U.S. Cl. 260—45.7 3 Claims

Liquid polymercaptan resins employed typically in sealants and adhesives, and typically having oxyalkylene linkages forming a portion of the polymer backbone, can show excellent color stability as well as suppressed skin formation, for filled and unfilled systems, during storage when such liquid resins are contacted with a chelating agent. For example, the agent can be blended directly with the resin or the resin can be washed with a dispersion or chelating agent in liquid medium prior to storage. Such agents do not deleteriously affect the desirable characteristics of the resin in use or storage.

3,764,579

ORGANOTIN COMPOUNDS AS COLOR AND CORROSION INHIBITORS IN THERMOPLASTIC POLYMER COMPOSITIONS CONTAINING FLAME

James S. Dix, Greenville, and Ronald D. Mathis, Mauldin, both of S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 32,454, April 20, 1970, abandoned. This application June 28, 1971, Ser. No. 157,701

Int. Cl. C08f *45/100*

U.S. Cl. 260—45.75 K 10 Claims

Corrosion of metal surfaces in contact with thermoplastic polymer compositions containing halogenated hydrocarbon flame retardants is substantially reduced by the addition of organotin salts of mercapto-substituted carboxylic acids. Color of the polymer composition is improved by the use of organotin salts of olefinically unsaturated diacids. Inclusion of both types of organotin compounds both inhibits corrosion and stabilizes polymer color.

3,764,580

PHENOL-BIS-AMIDE STABILIZER COMBINATIONS FOR POLYOLEFINS

Warren L. Beears, Brecksville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 873,651, Nov. 3, 1969, abandoned. This application Apr. 23, 1971, Ser. No. 137,066

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.8 N 6 Claims

Alkycarboxyalkylthio propionamides are effective stabilizers for polyolefine. N,N'-methylene-bis[β-(alkyl-carboxyalkylthio)propionamides] and hexahydro-1,3,5-tris[β-(alkyl-carboxyalkylthio)propionyl]-a-triazines are particularly useful stabilizers for polyethylene and polypropylene. The present alkylcarboxyalkylthio propionamides behave synergistically in combination with phenolic stabilizers derived from isocyanurates and 1,3,5-triazines.

3,764,581

PROCESS FOR THE PREPARATION OF POLYESTEROXIMES AND POLYBENZOXAZOLE (PBO) TYPE POLYMERS DERIVED THEREFROM

Carl N. Zellner, New Hope, Pa., and Henry W. Steinmann, Sparta, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,753

Int. Cl. C08g *33/02*

U.S. Cl. 260—47 R 21 Claims

Process for the preparation of polymers which comprises reacting at temperatures of from about 0° to about 250°C an aromatic diol or its alkali metal or Group IIa or IIb metal disalt with a bis(hydroxamoyl halide) or a derivative thereof to form a polyesteroxime, which may then be subjected to ring closing conditions to form polybenzoxazole (PBO) type polymers. Formation of the polyesteroxime is preferably conducted in the presence of a solvent, which may or may not also function as an acid-acceptor; if not, then preferably also in the presence of an acid-acceptor. The preferred acid-acceptors are those which are insoluble in the reaction mixture—most preferably melamine. The ring closure may be conducted in the presence of a catalyst at temperatures of from about 0° to

about 250°C or by reaction with a sulfonyl halide at temperatures of from about 0° to about 90°C. Reactive hydroxy or hydroxamoyl halide terminal groups of the polyesteroximes, or PBO type polymers, may be reacted with other compounds or polymers which contain groups reactive therewith in order to further extend the polymer chains. In a preferred prior step, aromatic bis(hydroxamoyl halide) reactants are made by the reaction of dialkyl aromatic precursors, e.g., any of the isomers of xylene, with, e.g., nitrosyl halide. Novel polyesteroximes.

3,764,582

PROCESS FOR PRODUCING EPOXIDE POLYADDUCTS IN PRESENCE OF PHOSPHORIC ACID TRIAMIDE ACCELERATORS

Joachim Lorenz, Bensheim-Auerbach, Germany, assignor to Ciba-Geigy Marienberg GmbH, Lautern/Odenwald, Germany

Filed Feb. 1, 1972, Ser. No. 222,696

Claims priority, application Germany, Feb. 3, 1971, P 21 04 912.7

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EC **2 Claims**

Process for the production of epoxide polyadducts by the reaction of epoxide compounds with compounds giving polyadducts of epoxide compounds, whereby the reaction is carried out in the presence of a phosphoric acid triamide as a reaction accelerator in an amount of 0.05 to 10 parts by weight to 100 parts by weight of the epoxide compound.

3,764,583

AROMATIC POLYMERS OF HALOPHENOLS OR HALOTHIOPHENOLS

Alan Branford Newton, Enfield; John Brewster Rose, Letchworth, and Victor Jeffrey Leslie, Potters Bar, all of England, assignors to Imperial Chemical Industries Limited, London, England

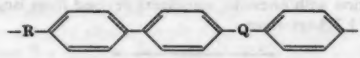
Continuation-in-part of Ser. No. 60,101, July 31, 1970, abandoned. This application Oct. 5, 1971, Ser. No. 186,795

Claims priority, application Great Britain, July 31, 1969, 38,438/69

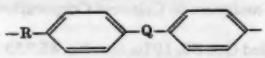
Int. Cl. C08g *23/00*

U.S. Cl. 260—49 **2 Claims**

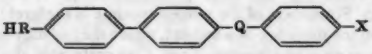
New aromatic polymers comprising units of the formula



and copolymers comprising such units and other units such as



are of higher softening point than polymers of the latter units alone. The new polymers may be made using an alkali metal salt of a halophenol of the formula



(where X is halogen) as monomer or comonomer. Q is -CO- or -SO_2- and R is -S- or -O-.

3,764,584

CURABLE COMPOSITIONS

Paul Hope, Walden; Richard John Martin, and Bernard Peter Stark, both of Cambridge, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 17, 1971, Ser. No. 199,786

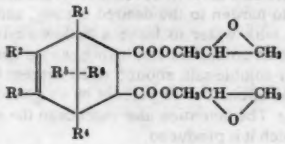
Claims priority, application Great Britain, Nov. 19, 1970, 55,106/70

Int. Cl. C08g *30/12*

U.S. Cl. 260—78.4 EP **6 Claims**

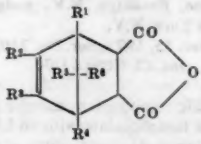
Compositions comprising

a. a diglycidyl ester of formula



and

b. a polycarboxylic anhydride of formula



where, in each formula, one of R^1 to R^6 is a hydrogen atom or a methyl or allyl group and the remaining R's denote hydrogen atoms, on being cured, show a very high thermal resistance and may be used as laminating resins, surface-coating resins, dipping resins, casting resins, adhesives, and potting and insulating materials for the electrical industry.

3,764,585

METHOD FOR THE PRODUCTION OF SYNTHETIC POLYAMIDES, WHICH COMPRISES ADDING AN AROMATIC ALDEHYDE CONTAINING SULFONIC ACID GROUPS TO THE REACTING MONOMERS

Francesco Siclari, Barlassina; Pierluigi Perazzoni, Palazzolo Milanese, and Pier Giorgio Silvestroni, Cesano Maderno, all of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

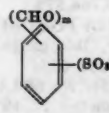
Filed May 3, 1972, Ser. No. 249,786

Claims priority, application Italy, May 7, 1971, 24251 A/71

Int. Cl. C08g *9/04, 9/24*

U.S. Cl. 260—72 N **11 Claims**

A method for obtaining synthetic polyamide yarns, more particularly polyamide yarns, is disclosed, which have a high affinity towards basic dyestuffs. The dyeability with basic dyestuffs is improved by adding to the polymerization mass, prior to, or during progress of, polymerization, an aromatic aldehyde having the general formula



wherein *m* and *n* are integers which are 1 or 2, the group SO_3X indicates both a free sulphonic group or such a group salified

with a member selected from the group consisting of ammonium ions, alkali metals and alkaline earth metals.

Hypophosphorous acid, or an alkali metal salt thereof can also be added to improve the whiteness of the parts of the yarn or fabric which are not to be dyed.

3,764,586

POLYELECTROLYTE BUILDER AND DETERGENT COMPOSITIONS

Charles J. Lancelot, 47 Brooktree Rd., Hightstown, N.J., and Donald G. MacKellar, 3 Glenolden Dr., Yardley, Pa.

Filed May 1, 1970, Ser. No. 33,914
Int. Cl. C08f *13/04, 27/04*
U.S. Cl. 260—78.4 R 2 Claims

A novel class of polyelectrolytes having the form of poly-β-ketoacids and their salts is described, as is the use of these polyelectrolytes as builders in detergent formulations.

3,764,587

ACRYLIC INTERPOLYMERS FOR FLEXOGRAPHIC INKS

David William Zunker, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 2, 1971, Ser. No. 130,536
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.8 8 Claims

Acrylic interpolymers consisting essentially of, by weight, about 25 to 95 percent ethyl methacrylate, about 5 to 75 percent acrylic monomer selected from the group consisting of n-butyl methacrylate, n-butyl acrylate, 2-ethylhexyl methacrylate and 2-ethylhexyl acrylate, and about 0.5 to 10 percent ethylenically unsaturated acid selected from the group consisting of acrylic acid, methacrylic acid and itaconic acid, and having an inherent viscosity of about 0.2 to 0.35 are useful as improved binders for flexographic inks.

3,764,588

CURABLE AMORPHOUS OLEFINIC TERPOLYMERS OBTAINED FROM ALPHA-OLEFINS AND POLYENES CONTAINING TWO CONJUGATED DOUBLE BONDS AND PROCESS FOR OBTAINING SAME

Sergio Arrighetti, Milan; Arnaldo Roggero, San Donato Milanese; Eugenio Vajna, San Donato Milanese, and Sebastiano Cesca, San Donato Milanese, all of Italy, assignors to Snam Progetti, S.p.A., Milan, Italy

Filed Jan. 22, 1971, Ser. No. 109,033
Claims priority, application Italy, Jan. 22, 1970, 19653 A/70; Jan. 22, 1970, 19655 Z/70
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.7 13 Claims

New, readily curable, amorphous terpolymers are disclosed which are prepared from ethylene, propylene and a polyene hydrocarbon which contains two double bonds and is represented by the formula:

$$A' - (C(R_o)_2)_n - (CH)_m B'$$

wherein A′ is a radical containing a ring having an endomethylene group; B′ is an alkadiene group; R_o may be hydrogen, an aryl or an alkyl radical; *n* is a whole number ranging from 0 to 3 and *m* is either 0 and 1, *m* being 0 if *n* is different from 0, whereas *m* may be both 0 and 1 if *n* is 0.

3,764,589

ALPHA-OLEFIN INTERPOLYMERS FORMED WITH UNSATURATED ORGANO SILANES

William C. Bond, Jr, and Harold J. Wahlborg, both of Baton Rouge, La., assignors to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed June 17, 1971, Ser. No. 154,196
Int. Cl. C08f *15/04*
U.S. Cl. 260—80.71 27 Claims

The preparation of interpolymers of ethylene by interpolymerization of ethylene, an unsaturated organo silane and a monoolefin and with or without a polyene in the presence of a Ziegler type catalyst, particularly to produce uniquely modified polymers from the post-reaction between nucleophiles and the hydrolyzable groups that remain attached to the silicon atom in the interpolymer.

3,764,590

ORGANIC PHOTOCONDUCTIVE MATERIALS

Akio Mukoh; Yasuki Mori; Kiyoshi Sakashita, all of Hitachi-shi; Sukekatsu Nozaki, and Akira Hagitani, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1971, Ser. No. 131,736
Claims priority, application Japan, Apr. 8, 1970, 45/29339; Dec. 7, 1970, 45/107568; Dec. 7, 1970, 45/107569; Dec. 7, 1970, 45/107570
Int. Cl. C08f *7/02, 19/00*
U.S. Cl. 260—85.5 R 17 Claims

A novel compound 9-(p-vinylphenyl)anthracene is prepared by the reaction of anthrone or 9-substituted anthracene with a p-substituted styrene. Polymers or copolymers of 9-(p-vinylphenyl)anthracene or brominated thereof show excellent photoconductivity.

3,764,591

PROCESS FOR POLYMERIZATION OF αOLEFIN

Katsuyoshi Miyoshi, Chigasaki; Yoichi Iwasaki, Yokohama; Yunichi Hotta, and Masaki Fujii, both of Yokkaichi, all of Japan, assignors to Toho Titanium Company Limited, Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 213,166
Claims priority, application Japan, Dec. 28, 1970, 45/127992
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—88.2 R 8 Claims

α-olefin polymerization is effected in the presence of a catalyst comprising: (1) an organo aluminum compound, and (2) a compound prepared by milling a halogen compound of titanium, wherein said titanium ion has a valance of less than the maximum valence, with an α, β-unsaturated carboxylic ester and thereafter treating with 0.1 – 5 mole percent of oxygen, based on said titanium compound.

3,764,592

SILICON-POLYBUTADIENE RESINS

Robert C. Antonen, and Gust J. Kookootsedes, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 50,987, June 29, 1970, Pat. No. 3,333,067. This application Nov. 24, 1971, Ser. No. 202,033
Int. Cl. C08d *5/02, 5/04*
U.S. Cl. 260—94.2 R 7 Claims

Silicone-polybutadiene resins wherein a siloxy-terminated polybutadiene having vinyl groups on alternate carbon atoms of the diene backbone is condensed by means of functionality on the silicon atoms with a hydroxyl-functional organo-silicon resin, the vinyl groups of the diene being cyclized by means of an organic peroxide catalyst, have utility as protective coatings.

3,764,593

BACTERIOCIDAL NON-CORROSIVE BIODEGRADABLE COMPOSITION AND METHOD OF MANUFACTURING SAME

Dietrich Schuster, Am Bergborn 160, Frankfurt Upper Palatinate, Germany

Continuation-in-part of Ser. No. 545,127, April 25, 1966, Pat. No. 3,429,909, which is a continuation-in-part of Ser. No. 413,366, Nov. 23, 1964, abandoned. This application Aug. 28, 1968, Ser. No. 755,978

Int. Cl. C09f 1/04

U.S. Cl. 260—97.5 12 Claims

Boron- and nitrogen-containing reaction product is obtained by reacting boric acid, a secondary amino-alcohol and a carboxylic acid, under specified conditions. Products are bacteriocidal, non-corrosive and biodegradable, and can be dissolved, dispersed or emulsified in water.

3,764,594

METHOD OF OBTAINING CYTOSINE INOSINATE AND DERIVATIVES

Cristobal Martinez Roldan; Miguel Fernandez Brana, and Antonio Vila-Coro Barrachina, all of Madrid, Spain, assignors to Laboratorios Made, S.A., Madrid, Spain

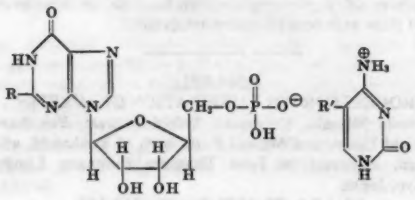
Filed Nov. 9, 1970, Ser. No. 88,114

Claims priority, application Spain, Nov. 7, 1969, 373319

Int. Cl. C07d 51/50

U.S. Cl. 260—211.5 R 1 Claim

A compound of the formula



wherein R is selected from the group consisting of H and NH_2, and R′ is selected from the group consisting of H, CH_3 and CH_2OH.

The compound is prepared by reacting cytosine and inosinic acid in a polar solvent and is useful in the treatment of hepatic diseases.

3,764,595

ERYTHROMYCIN ASPARTATE SALT

Gerardo Fabrizio, Santa Maria Capua Vetere, Italy, assignor to Pierrel S.p.A., Milan, Italy

Filed Jan. 13, 1970, Ser. No. 2,685

Claims priority, application Great Britain, Jan. 15, 1967, 2,437/69

Int. Cl. C07c 129/18

U.S. Cl. 260—210 E 1 Claim

A new water soluble derivative of erythromycin, namely, erythromycin aspartate, is provided. The product is prepared by reacting erythromycin base with a substantially equimolar amount of aspartic acid or the ammonium salt of aspartic acid. The resulting erythomycin aspartate, which may be recovered as a white crystalline powder, is quite soluble in water and provides substantially neutral aqueous solutions which may be administered by the parenteral route, as well as by other modes of administration, for treatment of infections caused by gram-positive bacteria.

3,764,596

17-DIHYDROFURANYL-SUBSTITUTED STEROIDS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed June 22, 1971, Ser. No. 155,642

Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 16 Claims

Steroids of the gonane skeleton bearing a 17-dihydrofuranyl are prepared by treating a 17α-propadienyl-substituted steroid with silver (I) cation, and are useful as pharmaceuticals.

3,764,597

2-TRIALKYLSILYLALKYL-5,6-DIHYDRO-1,3(4H)-OXAZINES

Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Mar. 10, 1972, Ser. No. 233,816

Int. Cl. C07d 87/14

U.S. Cl. 260—244 R 7 Claims

4,4,5-Trialkyl-2-trialkylsilylalkyl-5,6-dihydro-1,3(4H)-oxazines, e.g. 4,4,6-trimethyl-2-trimethylsilylmethyl-5,6-dihydro-1,3(4H)oxazine are prepared by reacting the lithio salt of a 2,4,4,6-tetraalkyl-5,6-dihydro-1,3(4H)-oxazine with a halotrialkylsilane and are useful by reason of their pharmacological activity in animals, e.g. in the treatment of peptic ulcers.

3,764,598

PYRIMIDOPYRIDAZINE DERIVATIVES

Shojiro Yurugi, Kyoto, and Shintaro Kikuchi, Hyogo, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

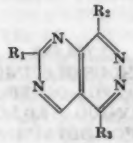
Filed Sept. 24, 1970, Ser. No. 75,294

Claims priority, application Japan, Sept. 24, 1969, 44/76125; June 24, 1970, 45/54984

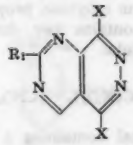
Int. Cl. C07d 87/40

U.S. Cl. 260—246 B 19 Claims

Compounds of the formula

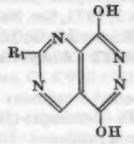


wherein R_1 stands for an aromatic hydrocarbon or a heterocyclic group, which is unsubstituted or substituted, R_2 and R_3 are the same or different and represent $-NH_2$, a secondary amino group or a tertiary amino group and their pharmaceutically acceptable salts are useful as diuretics. The compounds are produced by reacting a compound of the formula



wherein R_1 has the same meaning as above and X is halogen including chlorine, bromine, etc. with an amine corresponding

to R_2 and R_3 in the general formula [I]. Compounds of formula [II] are prepared by halogenation of a compound of the general formula [III]



wherein R_1 has the same meaning as above.

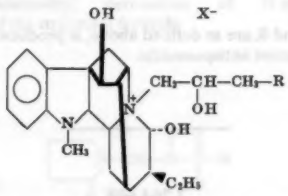
3,764,599

AMINO ALCOHOL DERIVATIVES OF AJMALINE

Klaus Braun; Gunther Gabsch, both of Radebeul; Werner Forster, Halle; Rolf Ertel, Dresden, and Klaus Femmer, Radebeul, all of Germany, assignors to VEB Arzneimittelwerk Dresden, Radebeul, Germany

Filed July 30, 1970, Ser. No. 59,700
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.2 R **9 Claims**

Novel amino alcohol derivatives of ajmaline having the following formula



in which R is a primary or secondary aliphatic or cyclic amino group and X is the anion of an inorganic or organic acid having valuable therapeutic properties and in particular being characterized by antiarhythmic activity.

3,764,600

1-SUBSTITUTED-QUINAZOLINE-2(1H)-THIONES

Hans Ott, Basel-Land, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 819,477, April 25, 1969, abandoned, Continuation-in-part of Ser. No. 741,805, July 1, 1968, abandoned. This application Oct. 6, 1970, Ser. No. 78,587
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 QB **17 Claims**

The present invention discloses compounds of the class of 1-substituted-quinazoline-2(1H)-thiones from the group of 1-substituted-4-aryl-quinazoline-2(1H)-thiones and 1-substituted-4-aryl-3,4-dihydro-quinazoline-2(1H)-thiones, e.g. 1-isopropyl-4-phenylquinazoline-2(1H)-thione, which are useful as anti-inflammatory agents; methods of preparation of said compounds; and pharmaceutical compositions incorporating said compounds.

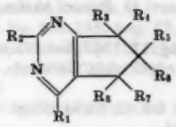
3,764,601

CYCLOPENTAPYRIMIDINES

William J. Evers, Atlantic Highland, and Manfred H. Vock, West Orange, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 123,023
Int. Cl. C07d *51/46*
U.S. Cl. 260—251 A **15 Claims**

Processes for altering the flavors of consumable products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one cyclopentapyrimidine having the formula



wherein R_1 is alkyl, alkoxy, alkylthio, cycloalkylthio or hydrogen; R_2 is hydrogen, alkyl or alkylthio; and R_3, R_4, R_5, R_6, R_7 and R_8 are the same or different and are hydrogen or alkyl, preferably lower alkyl containing from one to three carbon atoms; with the proviso that R_1 and R_2 are not both alkylthio; flavoring and flavor-enhancing compositions containing such cyclopentapyrimidines; and novel cyclopentapyrimidines and processes for the preparation of such cyclopentapyrimidines.

3,764,602

3-(4-PHENYL-1 2, 6 DI KETO PIPERAZINYL)-2-HYDROXY-PROPOXY)-ANILINE

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 882,297, Dec. 4, 1969, Pat. No. 3,701,777. This application July 7, 1972, Ser. No. 269,680
Int. Cl. C07d *51/72*
U.S. Cl. 260—268 DK **3 Claims**

Substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propyl-thio]anilines prepared, inter alia, by the reaction of the correspondingly substituted propoxy or propyl-thio anilines and N-phenyl-piperazines, are described. The end products, i.e., the substituted [3-(4-phenyl-1-piperazinyl)-propoxy or propyl-thio] anilines are useful as hypotensive agents. These may be prepared via the corresponding 2,6 piperazine diones.

3,764,603

2-HYDROXY-2-CARBOXYETHYL-N-(7- OR 8-CHLORO-4-QUINOLINYL)ANTHRANILATE

Robert John Theriault, Kenosha, Wis.; Earl Elmer Fager, Lake Villa, and Norman Earl Wideburg, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 13, 1972, Ser. No. 246,091
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R **3 Claims**

2-Hydroxy-2-carboxyethyl-N-(7- or 8-chloro-4-quinolinyl)anthranilate. The compounds are useful as analgesic agents.

3,764,604

4-PYRIDYLCARBINOLAMINE ANTI-MALARIALS

Arthur B. Ash; Calvin L. Stevens, both of Detroit, and Anica Markovac, Lathrup Village, all of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 784,467, Dec. 17, 1968, Pat. No. 3,600,396. This application June 7, 1971, Ser. No. 150,745
Int. Cl. c07d *39/06*
U.S. Cl. 260—293.53 **9 Claims**

A series of 4-pyridylcarbinolamines is herein disclosed which has value in treatment of plasmodial infections. The compounds have substituted phenyl groups at positions 2- and 6- on the pyridine moiety, with the electronegative substituents (the same, or different) present on the phenyl nuclei. The syntheses of such series is described, together with a method for separation of racemates of a representative 4-pyridyl-carbinolamine type.

3,764,605

4-BENZENE SULPHONYL-1,1-[(1′, 4′-ETHANO)-PENTAMETHYLENE] SEMICARBAZIDES

Hans Plumpe, and Walter Puls, both of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 17, 1967, Ser. No. 661,198

Claims priority, application Germany, Aug. 22, 1966, F 50003

Int. Cl. C07d 39/06

U.S. Cl. 260—293.54 7 Claims

Arylsulphonyl-semicarbazides of the formula:

I

wherein R and R′ are the same or different and are each hydrogen, halogen, saturated or unsaturated lower alkyl, lower alkoxy, acyl, amino, acylamino or trifluoromethyl which may be substituted by halogen, hydroxy, lower alkoxy, amino or acylamino, exhibit a strong blood sugar depressant effect. A representative compound and a particularly effective one is 4-(p-toluolsulphonyl)1-,1-[(1′, 4′-ethano)-pentamethylene]-semicarbazide. Processes for the production of the arylsulphonyl-semicarbazides I are disclosed.

3,764,606

9,9-DI-SUBSTITUTED -6,7-BENZOMORPHANS

Antony M. Akkerman, Amsterdam, Netherlands, and Paul Adriaan Jan Janssen, Vosselaar, Belgium, assignors to ACF Chemiefarma N.V., Amsterdam, Netherlands

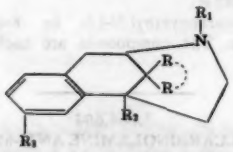
Filed May 27, 1970, Ser. No. 41,079

Claims priority, application Netherlands, June 4, 1969, 6908527; June 4, 1969, 6908528; June 4, 1969, 6908529

Int. Cl. C07d 39/100

U.S. Cl. 260—293.54 4 Claims

6,7-benzomorphan derivatives having analgesic and morphine-antagonistic properties are of the formula



in which the substituents R are either lower alkyl groups or groups which, together with the carbon atom to which they are bonded, form a cycloaliphatic ring, and the substituents R_1, R_2 and R_3 may or may not be made and, if made, R_1 represents either a hydrogen atom or an alkyl, haloalkyl, alkenyl, alkinyl, aralkyl, cycloalkenyl, cycloalkylalkyl, cycloalkenylalkyl or cycloalkylidine-alkyl group, R_2 is an alkyl, aryl, heteroaryl or aralkyl group, and R_3 is a hydrogen atom or an hydroxy, alkoxy, alkoxy-alkoxy or acyloxy group. Such 6,7-benzomorphans may be in the form of their optically active enantiomers and/or their therapeutically acceptable salts. There are also disclosed methods for producing such 6,7-benzomorphan derivatives, and intermediates useful in such production.

3,764,607

3-PIPERIDYLIDENE METHANE DERIVATIVES

Mitsutaka Kawazu; Takeshi Kanno; Seiichi Saito, and Hajime Tamaki, all of Saitama, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

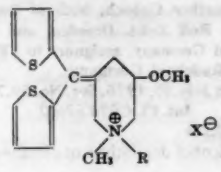
Filed June 3, 1971, Ser. No. 149,849

Claims priority, application Japan, June 11, 1970, 45/50540

Int. Cl. C07d 99/06

U.S. Cl. 260—293.68 7 Claims

Di-(2-thienyl)-(N-methyl-5-methoxy-3-piperidyl)-carbinol is dehydrated. Di-(2-thienyl)-(N-methyl-5-methoxy-3-piperidylidine-methane is produced. The resultant di-(2-thienyl)-(N-methyl-5-methoxy-3-piperidylidene)-methane is reacted with a compound of the formula R-X, wherein R is lower alkyl and X is an anionic residue of a pharmaceutically acceptable acid. A compound having the formula



wherein X and R are as defined above, is produced. This compound is a potent antispasmodic.

3,764,608

PYRIDYL XANTHATES AND METHODS FOR PREPARING THE SAME

Joseph E. Dunbar, and John W. Zemba, both of Midland City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 65,741, Aug. 20, 1970, Pat. No. 3,674,795. This application Feb. 17, 1972, Ser. No. 227,279

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 E 5 Claims

Novel pyridyl Xanthate compounds are prepared by the reaction of a polychloro-4-alkylsulfonyl pyridine or pentachloropyridine with an alkali metal salt of an alkylxanthic acid in the presence of an inert carrier as a reaction medium at a temperature of from about 20° C. to about 95° C. The novel compounds are active as pesticides.

3,764,609

1 (DIBENZO [4,D] CYCLOHEPTEN-5-YL), 1-(DIBENZO [A,D] CYCLOHEPTAN-5-YL) AND 1-(DIBENZO [A,D] CYCLOOCTANYL)IMIDAZOLES

Cornelis Van Der Stelt, Haarlem, Netherlands, assignor to N. V. Koninklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman & Pharmacia, Meppel, Netherlands

Filed June 10, 1971, Ser. No. 151,913

Claims priority, application Great Britain, June 22, 1970, 50,246/70; Apr. 30, 1971, 12,546/71

Int. Cl. C07d 49/36

U.S. Cl. 260—309 5 Claims

The invention relates to therapeutically useful imidazole derivatives and their acid addition and quaternary ammonium salts, to processes for their preparation and pharmaceutical preparations containing them. The compounds of this invention possess fungicidal activity.

3,764,610

5[α-(P-SUBSTITUTED BENZOYL)-P-SUBSTITUTED BENZYLAMINO]-1,3-DIMETHYLPYRAZOLES

Leo Ralph Swett, Waukegan, Ill., and Gerard Yvon Paris, Duvernay, Quebec, Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 112,767, Feb. 4, 1971, Pat. No. 3,701,785. This application May 30, 1972, Ser. No. 257,731

Int. Cl. C07d *49/38*

U.S. Cl. 260—310 R 2 Claims

1,3-Dimethyl-4,5-di(p-substituted phenyl)-6H-pyrrolo[2,3-c]pyrazoles and novel intermediates useful in their synthesis. The compounds are useful as anti-inflammatory and anti-pyretic agents.

3,764,611

N-(SUBSTITUTED SULFONAMIDOMETHYL)-2-PYRROLIDINONES

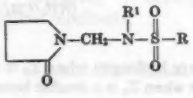
Harlan B. Freyermuth, and David I. Randall, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Apr. 16, 1970, Ser. No. 29,297

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.5 SF 11 Claims

Sulfonamidomethyl derivatives of N-methyl-2-pyrrolidinone of the structural formula:



wherein R represents a hydrocarbon group such as alkyl, aryl, cycloalkyl, aralkyl or alkaryl and R^1 represents hydrogen, alkyl or aralkyl, are useful as non-volatile plasticizers for synthetic thermoplastic resins. They are prepared by the reaction of N-hydroxymethyl-2-pyrrolidinone with an appropriate hydrocarbyl sulfonamide in the presence of an acid catalyst.

3,764,612

PREPARATION OF 1-AMINOALKYLAMINO-9-OROTHIOXANTHENE-4-CARBOX-ALDEHYDES

Joseph C. Collins, and David Rosi, both of East Greenbush, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 78,221

Int. Cl. A61k *27/00*; C07d *65/18*

U.S. Cl. 260—328 10 Claims

1-(R_1R_2N-Y-NH)-9-oxothioxanthene-4-carboxaldehydes, intermediates for the preparation of the corresponding 4-hydroxymethyl compounds, are prepared by heating 1-chlorothioxanthen-9-one with R_1R_2N-Y-NHCH$_3$ to yield 1-[R_1R_2N-Y-NH(CH$_3$)]thioxanthen-9-one, reacting the latter compound with phosphorus oxyhalide and dimethylformamide to yield 1-[$R_1R_2$$^{N\text{-}Y\text{-}NHCH_3}$)]-9-oxothioxanthene-4-carboxaldehyde and reacting said aldehyde with pyridine hydrochloride to produce 1-(R_1R_2N-Y-NH)-9-oxothioxanthene-4-carboxaldehyde, where R_1 and R_2 are each lower-alkyl and Y is lower-alkylene having from two to four carbon atoms and having its two connecting linkages on different carbon atoms. The novel intermediates, 1-[R_1R_2N-Y-N(CH$_3$)]thioxanthen-9-ones, also have antibacterial activity.

3,764,613

ARYL SUBSTITUTED-HYDROXY SUBSTITUTED CYCLOHEXENECARBOXYLIC ACIDS AND ESTERS

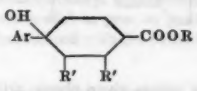
George Karmas, Bound Brook, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 662,295, Aug. 22, 1967, Pat. No. 3,567,770. This application Sept. 23, 1970, Ser. No. 74,859

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 1 Claim

Hydroxyacids and hydroxyesters of the formula:



wherein R is hydrogen or lower alkyl, R′ is lower alkyl and Ar is substituted aryl, are intermediates in the preparation of 2-lower alkyl-3-lower alkyl-4-aryl-cyclohexenecarboxylic acids and esters which are active agents for the suppression of animal reproduction.

3,764,614

F.E.S. DERIVATIVES

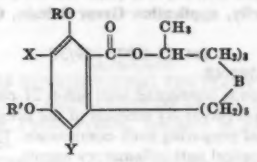
Herbert L. Wehrmeister, Terre Haute, Ind., and Wilbert H. Urry, Chicago, Ill., assignors to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Feb. 16, 1970, Ser. No. 11,879

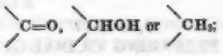
Int. Cl. C07d *9/00*

U.S. Cl. 260—343.2 F 8 Claims

New compounds are provided and have the formula



where B is



R and R′ can be hydrogen, alkyl, acyl or aralkyl radicals; and X and Y are hydrogen or chlorine and at least one of X and Y is chlorine. These compounds exhibit antibacterial activity and can be used in animal feed compositions.

3,764,615

PROCESS FOR THE PREPARATION OF PREGNANE DERIVATIVES

Helmut Hauser, Unna, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany

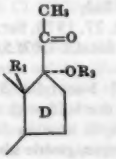
Filed Aug. 1, 1972, Ser. No. 277,123

Claims priority, application Germany, Aug. 6, 1971, P 21 40 291.5; June 16, 1972, P 22 30 286.9

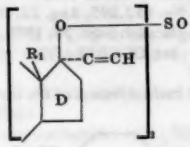
Int. Cl. C07c *167/20*

U.S. Cl. 260—397.4 12 Claims

Pregnane steroids having the partial formula



wherein R_1 is methyl or ethyl and R_2 is hydrocarbon or acyl, are produced by reacting a steroid sulfite ester of the partial formula



wherein R_1 has the values given above, with an alcohol or a carboxylic acid, in the presence of a water-binding agent and a mercury salt. The thus-produced 17-ether or 17-ester respectively, of the alcohol or acid employed in the reaction can, if desired, by hydrolyzed to obtain the 17-hydroxy compound otherwise corresponding to Formula I wherein R_2 is a hydrogen atom.

3,764,616

21-PHOSPHATE ESTERS OF 17α-ACYLOXY-21 HYDROXY STEROIDS OF THE PREGNANE SERIES

Joseph Elks, London; Peter John May, Harrow, and Gordon Hanley Phillipps, Greenford, all of England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Filed Oct. 14, 1969, Ser. No. 866,385

Claims priority, application Great Britain, Oct. 18, 1968, 48,643/68

Int. Cl. C07c *169/30*

U.S. Cl. 260—397.45 **6 Claims**

This invention is concerned with novel 21-phosphate esters of 17α-acyloxy-21-hydroxy steroids of the pregane series and with methods of preparing such compounds. The compounds are useful as topical anti-inflamatory agents.

3,764,617

PROCESS FOR PREPARING VICINAL GLYCOLS FROM OLEFINS

David C. Heckert, Oxford, and Donald V. Julian, Colerain Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 29, 1970, Ser. No. 51,022

Int. Cl. C07c *29/02, 31/34, 67/00*

U.S. Cl. 260—410.7 **7 Claims**

Process for preparing haloesters, halohydrins and vicinal glycols by halogenating olefins in the presence of water and an amide.

3,764,618

ALUMINUM SALTS OF 3-ACETYL-18β-GLYCYRRHETINIC ACID

Attilio Bonati, Milan, Italy, assignor to Dott. Inverni & Della Beffa S.p.A., Milan, Italy

Filed Oct. 27, 1970, Ser. No. 84,911

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 R **4 Claims**

Aluminum salts of 3-acetyl-18β-glycyrrhetinic acid are prepared by reacting the acid with alcoholates of aluminum and are useful primarily in treating disorders of the alimentary canal such as, for example, gastric ulcers.

3,764,619

THIOSULFATOETHYL SULFONES

Giuliana C. Tesoro, Dobbs Ferry, and Andrew Oroszlan, Elmhurst, both of N.Y., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 227,717, Oct. 2, 1962, abandoned, which is a continuation-in-part of Ser. No. 165,017, Jan. 8, 1962, Pat. No. 3,419,566. This application Mar. 22, 1971, Ser. No. 126,867

Int. Cl. C01b *17/64*

U.S. Cl. 260—453 R **1 Claim**

Certain thiosulfatoalkyl-alkoxyalkyl sulfones useful as modifiers of polymeric substrates are disclosed.

3,764,620

NOVEL AZALKANE PROSTAGLANDIN COMPOUNDS

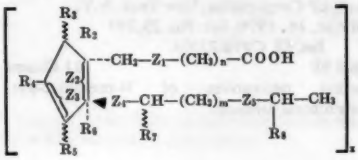
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Sept. 8, 1970, Ser. No. 70,520

Int. Cl. C07c *87/20*

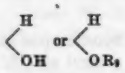
U.S. Cl. 260—501.2 **9 Claims**

Novel compounds of the formulae



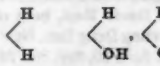
$\cdot [NH_2(CH_2)_3NH(CH_2)_4NHR_{10}]$

wherein R_2 and R_6 are hydrogen when Z_2 is a single bond and R_7 and R_6 are absent when Z_2 is a double bond; R_3 is keto,



R_4 is hydrogen or

R_5 is hydrogen,



R_7 is hydroxyl or OR_9; R_8 is hydrogen or hydroxyl; R_9 is an acyl or alkoxyalkyl; R_{10} is hydrogen; Z_1 is $-CH_2CH_2-$ or cis $-CH=CH-$; Z_2 is a single or a double bond and it is a single bond when R_2 and R_6 are hydrogen and a double bond when R_2 and R_6 are absent; Z_3 is a single bond except when R_4 is hydrogen and R_5 is hydrogen; and when R_4 and R_5 are hydrogen, Z_3 is a double bond; Z_4 is $-CH_2CH_2-$ or trans $-CH=CH-$; Z_5 is $-CH_2CH_2-$ or cis $-CH=CH-$; n is 2 to 5; m is 1 to 3; and x is 1 to 4. The compounds possess enhanced biological stability, and can serve as a reservoir for supplying prostaglandins that stimulate smooth muscles, act as vasoconstrictors, vasodepressors, inhibit gastric secretion, inhibit lipolysis and inhibit platelet aggregation.

3,764,621

CERTAIN SUBSTITUTED METHYLBENZOIC ACIDS AND SUBSTITUTED METHYCYCLOHEXANE CARBOXYLIC ACIDS

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

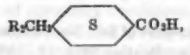
Division of Ser. No. 635,304, April 20, 1967, which is a continuation-in-part of Ser. Nos. 574,499, Aug. 18, 1966, and Ser. No. 574,276, Aug. 18, 1966. This application May 17, 1968, Ser. No. 730,200

Int. Cl. C07c *61/08, 63/04*

U.S. Cl. 260—514 R 13 Claims

The invention relates to compounds of the formula

wherein R_5 is cycloalkyl (C_4 to C_9), cycloalkylalkyl (C_5 to C_{10}), bicycloalkyl (C_7 to C_{10}) and tricycloalkyl (C_{10} to C_{11}) and



wherein R_7 is alkyl (C_3 to C_8), cycloalkyl (C_4 to C_9), cycloalkylalkyl (C_5 to C_{10}), bicycloalkyl (C_7 to C_{10}), or tricycloalkyl (C_{10} to C_{11}). These compounds are useful as intermediates in preparing N-acylcylclohexyl amines, having utility as animal repellants.

3,764,622

PURIFICATION PROCESS

Lawrence F. Kuntschik, Nederland, and Orville W. Rigdon, Groves, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed July 14, 1969, Ser. No. 841,549

Int. Cl. C07c *131/00*

U.S. Cl. 260—566 A 8 Claims

This invention concerns a process for purifying crude oximes containing carbonyl and/or chlorine contaminants comprising treating said crude oximes with a basic reagent such as the metal oxides, carbonates and alcoholates of Groups IA and IIA of the Periodic Table to decompose the contaminants and separating the purified oxime from the impurities preferably by molecular distillation.

3,764,623

HERBICIDAL DINITRO-1,3-PHENYLENEDIAMINE COMPOUNDS

Don L. Hunter, Anaheim; William G. Woods, Fullerton; James D. Stone, Whittier, and Cecil W. LeFevre, Orange, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Division of Ser. No. 875,508, Nov. 10, 1969, Pat. No. 3,617,252, which is a continuation-in-part of Ser. No. 812,307, April 1, 1969, abandoned. This application Sept. 3, 1970, Ser. No. 69,487

Int. Cl. C07c *87/58*

U.S. Cl. 260—573 11 Claims

2,4-dinitro-1,3-phenylenediamine compounds having a trifluoromethyl group on the aromatic ring. The compounds are useful as herbicides.

3,764,624

N-SUBSTITUTED-2,6-DINITRO-3-(ALKOXY OR ALKYLTHIO)-4-SUBSTITUTED-ANILINE COMPOUNDS

Philip L. Strong; Don L. Hunter, both of Anaheim, and Cecil W. Le Fevre, Tustin, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Filed Aug. 5, 1970, Ser. No. 61,428

Int. Cl. C07c *87/60, 93/14*

U.S. Cl. 260—574 11 Claims

N-Substituted 2,6-dinitro-3-alkoxyanilines having a halo, lower alkyl, or trifluoromethyl substituent at the 4-position. The compounds are useful as pre- or post-emergence herbicides and can be formulated with the usual herbicide carriers.

3,764,625

TRIFLUOROMETHYL-1,3-PHENYLENEDIAMINE COMPOUNDS

William G. Woods, Fullerton; Don L. Hunter, Anaheim; James D. Stone, Whittier, and Cecil W. Le Fevre, Anaheim, all of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Division of Ser. No. 812,357, April 1, 1969, Pat. No. 3,617,250. This application July 23, 1970, Ser. No. 57,787

Int. Cl. C07c *87/28, 87/62*

U.S. Cl. 260—577 7 Claims

N,N'Substituted-1,3-phenylenediamine compounds having a trifluoromethyl and a nitro group on the aromatic ring. The compounds are useful as herbicides.

3,764,626

METHOD OF SYNTHETIZING TERTIARY ALIPHATIC AMINES BY AMINATION OF ALKYL HALIDES

Pierre Pivette, Paris, France, assignor to Pierrefitte-Auby, Paris, France

Filed Dec. 21, 1970, Ser. No. 99,853

Claims priority, application France, Dec. 23, 1969, 6944604; Dec. 9, 1970, 7044332

Int. Cl. C07c *85/04*

U.S. Cl. 260—583 R 11 Claims

This invention is directed to the production, by synthesis, of tertiary aliphatic amines by amination of alkyl haloids, by means of secondary aliphatic amine, wherein a reaction mixture is prepared which consists of two fractions, one fraction comprising at least one alkyl haloid consisting mainly of halogen-1-alkane, the other fraction consisting of a secondary aliphatic amine within an aprotic dipolar solvent capable of dissolving the halide and the secondary amine but not of appreciably dissolving in the cold state the resulting tertiary aliphatic amine, whereby operation at relatively low temperatures and pressure values can be performed.

3,764,627

SEPARATION OF ALCOHOLS AND KETONES USING METHYLENE CHLORIDE AND WATER

Roy H. Prinz, Robstown, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 19, 1971, Ser. No. 126,263

Int. Cl. C07c *49/04*

U.S. Cl. 260—593 P 7 Claims

A dual solvent extraction process for separating mixtures of aliphatic ketones and water soluble alcohols, such as mixtures of acetone and methanol, one phase of the dual solvent being water and the other being methylene chloride. The alcohols are preferentially dissolved into the water phase and the ketones into the methylene chloride phase.

3,764,628

TERTIARY-TERTIARY BISPEROXIDES

Razmic S. Gregorian, Silver Spring, and Richard A. Bafford, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 946, Jan. 7, 1960, Pat. No. 3,118,866. This application July 29, 1960, Ser. No. 46,096
Int. Cl. C07c 73/00
U.S. Cl. 260—610 R 3 Claims

Tertiary-tertiary bisperoxides having the general formula:

wherein R is an alkyl and R_1 is an aryl or alkyl groups which have utility as crosslinking agents for polyethylene.

3,764,629

PROCESS FOR THE PREPARATION OF PYROCATECHOLS

Harvey Gurien, Maplewood, and Albert Israel Rachlin, both of Verona, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 730,920, May 21, 1968, abandoned. This application June 22, 1970, Ser. No. 48,476
Int. Cl. C07c 37/00
U.S. Cl. 260—621 R 4 Claims

The preparation of lower alkyl substituted pyrocatechol compounds by reacting a substituted phenolic ketone with an aqueous alkali metal carbonate-hydrogen peroxide solution. The pyrocatechol compounds are useful as intermediates in the preparation of pharmaceutically active compounds such as anti-bacterials, coccidiostats, and antioxidants.

3,764,630

ALKYLATION PROCESS

Bernardus J. Van Sorge, Selkirk, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed July 22, 1970, Ser. No. 57,357
Int. Cl. G07c 39/06
U.S. Cl. 260—621 R 16 Claims

There is provided a process for selectively alkylating a phenolic compound in the orthoposition to the significant reduction of alkylation in the meta- and para-positions which comprises alkylating the phenolic compound with an alkanol in the presence of water and a molybdenum catalyst in admixture with magnesium oxide, in the vapor phase at a temperature of from 200° to 600°C.

3,764,631

PRODUCTION OF 1-METHYL-3-PHENYLINDANS

Herbert Armbrust, Gruenstadt; Gerhard Kilpper, Mannheim; Waldemar Koehler, Ludwigshafen; Hans Juergen Quadbeck-Seeger, Ludwigshafen; Hans Georg Schecker, Ludwigshafen, and Hans Juergen Sturm, Gruenstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 10, 1972, Ser. No. 216,765
Claims priority, application Germany, Jan. 12, 1971, P 21 01 089.9
Int. Cl. C07c 15/20
U.S. Cl. 260—668 F 19 Claims

Production of 1-methyl-3-phenylindans by dimerization of styrenes in the presence of catalysts and oxidizing agents. The products are starting materials for the production of dyes and pesticides.

3,764,632

OXYDEHYDROGENATION PROCESS

Shigeo Takenaka, and Akira Iwamoto, both of Takasaki, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1970, Ser. No. 82,489
Claims priority, application Japan, Feb. 5, 1970, 45/9603
Int. Cl. C07c 5/18
U.S. Cl. 260—680 E 5 Claims

Conjugated dienes, such as butadiene, are prepared from monoolefins, such as butene-1, by oxydehydrogenation over a catalyst represented by the following general formula:

$$Ni_a Co_b Fe_c Bi_d L_e M_h Mo_i O_g$$

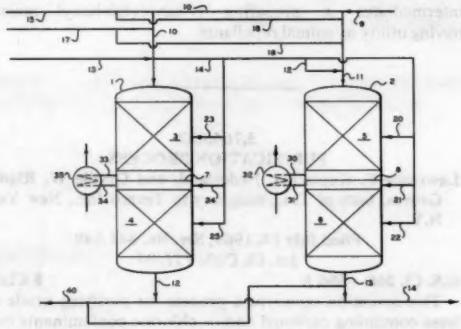
in which L is phosphorus, arsenic or boron, and M is potassium, rubidium or cesium, and wherein a and b have a value of from 0 to 15, $a+b$ being 2 to 15, c is 0.5 to 7, d is 0.1 to 4, e is 0 to 4, f is 12, g is a number determined by the valence requirements represented by Ni, Co, Fe, Bi, L, M and Mo, and h is 0.01 to 1.0.

3,764,633

OLEFIN ISOMERIZATION PROCESS

James W. Garner, and Bruce C. Benedict, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 743,068, July 8, 1968, abandoned. This application Sept. 18, 1970, Ser. No. 73,585
Int. Cl. C07c 5/30
U.S. Cl. 260—683.2 10 Claims



A process and catalyst for isomerizing olefinic hydrocarbons while simultaneously hydrogenating polyolefinic hydrocarbons and a method of pretreating and activating the catalyst.

3,764,634

PROCESS AND APPARATUS FOR PREPARING LOWER OLEFINS

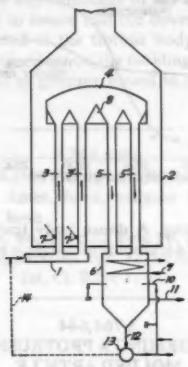
Tokuji Ozawa, Sakai; Mikio Ueda, Amagasaki; Ryosuke Hashimoto, Saitama, and Shigenori Suzuki, Osaka, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Chuoku, Tokyo, Japan

Filed Apr. 20, 1970, Ser. No. 30,185
Claims priority, application Japan, Apr. 23, 1969, 44/32840
Int. Cl. C07c 11/24, 3/00
U.S. Cl. 260—683 R 7 Claims

The present invention relates to a process and apparatus for producing unsaturated hydrocarbons, particularly olefins such as ethylene by thermal cracking of hydrocarbons.

In conventional tubular cracking furnaces having an external heating system, by-produced coke which accumulates on

the wall of the reaction tube, transfer line and cooling tube, is a serious hindrance to operation. Therefore, it is necessary to remove the coke by a chemical means with steam or air or by a mechanical means at an interval of 60 – 90 days. Prolongation of the interval between the decoking treatments has been



desired. Although countermeasures have been considered from the viewpoint of operating conditions, they cannot provide a complete solution to the problem. As for starting materials, only gaseous materials or light oil fractions permit continuous operation for as long as 60 – 90 days.

3,764,635

PROCESS FOR DISPROPORTIONATING THE OLEFINS

Vittorio Fattore, San Donato Milanese; Marcello Mazzei, Milano, and Bruno Notari, Milanese, all of Italy, assignors to Snam Progetti, S.p.A., Milanese, Italy

Filed Apr. 14, 1971, Ser. No. 134,094

Claims priority, application Italy, Apr. 14, 1970, 23269 A/70

Int. Cl. C07c *3/62*

U.S. Cl. 260—683 D 11 Claims

A process for disproportionating olefins is disclosed which employs a catalyst which includes tungsten and bismuth in the form of oxides or other forms.

3,764,636

METHOD FOR PRODUCING PENTENES

Etsuro Echigoya, 20-5, Aobadai-2, Midori-ku, Yokohama, and Atsuo Kobayashi, 28-17, Kyodo-2, Setagaya-ku, Tokyo, both of Japan

Filed Mar. 10, 1971, Ser. No. 123,028

Claims priority, application Japan, Sept. 14, 1970, 45/80731

Int. Cl. C07c *3/20*

U.S. Cl. 260—683.15 R 5 Claims

Pentenes are produced by codimerizing ethylene with propylene in the vapor phase in the presence of a nickel oxide-tungsten oxide catalyst, the atom ratio of nickel to tungsten being in the range of about 1:3 to 3:1, supported on a carrier at a temperature of 150°–450°C under pressure of 1 to 150 atmospheric pressures.

3,764,637

THERMAL ALKYLATION WITH LOW PARAFFIN TO ETHYLENE MOLE RATIO

Richard K. Lyon, Fanwood, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Apr. 13, 1971, Ser. No. 133,758

Int. Cl. C07c *3/50*

U.S. Cl. 260—683.47 3 Claims

Thermal alkylation reaction of straight and branched-chain paraffins with ethylene is carried out in the presence of HCl at low paraffin to olefin mole ratio of about 3 to about 0.5 . In a preferred embodiment, isobutane is condensed with ethylene to yield 2,2-dimethyl butane.

3,764,638

PROCESSING AIDS FOR POLYVINYL CHLORIDE AND METHODS FOR THEIR PREPARATION

Jesse C. H. Hwa, Stamford, Conn., and Ruth E. Gallagher, Dobbs Ferry, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 715,936, March 25, 1968, abandoned. This application July 9, 1970, Ser. No. 53,687

Int. Cl. C08f *37/18*, *15/26*

U.S. Cl. 260—876 R 12 Claims

Relatively small proportions of acrylic monomer are added to a polyvinyl chloride emulsion and polymerization initiated with a water-soluble free radical catalyst. The product is useful especially as a processing aid for polyvinyl chloride.

3,764,639

BLOCK COPOLYMERS OF CONJUGATED DIENES AND LACTONES

Henry L. Hsieh; Francis X. Mueller, Jr., and William R. Busler, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 679,978, Nov. 2, 1967, abandoned. This application Feb. 16, 1971, Ser. No. 115,793

Int. Cl. C08f *19/06*, *25/00*

U.S. Cl. 260—880 B 22 Claims

Block copolymers formed from a conjugated diene or monovinyl substituted aromatic compound and a lactone using a lithium-containing catalyst.

3,764,640

A PROCESS OF MAKING PHOSPHORUS AND HALOGEN CONTAINING POLYOLS

Werner Klose, Knapsack, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack, Germany

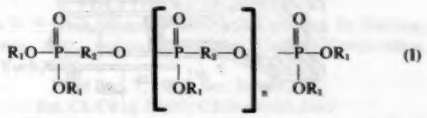
Filed July 15, 1971, Ser. No. 163,097

Claims priority, application Germany, July 23, 1970, P 20 36 587.1

Int. Cl. C07f *9/08*, *9/02*

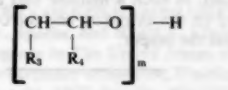
U.S. Cl. 260—978 4 Claims

The invention provides phosphorus and halogen-containing polyols of general formula (I)



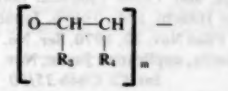
(I)

in which *n* stands for a number of between 0 and 4, R_1 stands for at least one halogenated hydrocarbon radical and at least one hydroxylated radical of general formula (II)



(II)

and R_2 stands for a radical of general formula (III)



(III)

the substituents R_3 and R_4, respectively, in formulae (II) and (III) standing for a hydrogen atom or a hydrocarbon radical

having from one to six carbon atoms and being halogen-substituted, if desired, and *m* stands for a number of between 1 and 10.

3,764,641

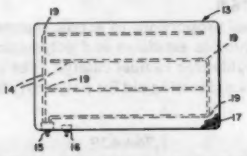
METHOD OF FORMING IRREGULARLY SHAPED HOLLOW ARTICLES USING A VARIABLE STIFFNESS MANDREL

Alvin G. Ash, P.O. Box 5893, Gig Harbor, Wash.

Continuation of Ser. No. 762,857, Sept. 26, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,120

Int. Cl. B29d *27/04*

U.S. Cl. 264—45 **5 Claims**



A structure of flexible foam material covered by an elastomeric casing which is subjected to increased internal air pressure to make the structure rigid. Creating a vacuum within the structure causes it to collapse. The structure is used as a mandrel in a process for fabricating plastic conduits. The structure includes flexible tubes embedded in the foam material inflated to improve structural strength.

3,764,642

METHOD FOR EXTRUDING PROFILED SECTIONS OF EXPANDED THERMO PLASTIC MATERIAL HAVING AN INTEGRAL SKIN

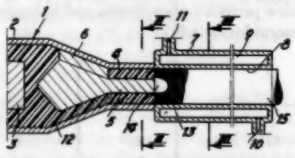
Pierre Emile Boutillier, Colombes, France, assignor to Societe Anonyme Ugine Kuhlmann, Paris, France

Continuation-in-part of Ser. No. 664,738, Aug. 31, 1967, abandoned. This application Mar. 20, 1969, Ser. No. 808,760

Claims priority, application France, Mar. 25, 1968, 68145290

Int. Cl. B29d *7/02, 27/00*

U.S. Cl. 264—47 **15 Claims**



This invention relates to the manufacture by extrusion profiled products of expanded plastic material. An expansible plastic composition is extruded through an annular die opening into a cooled shaper having the same cross-section as the desired product, in such a manner that a high-density, rigid skin is formed on the extrudate and the composition expands inwardly within the shaper.

3,764,643

METHOD FOR SINTERING VERY PURE YTTRIA COMPACTS TO TRANSPARENCY

Akinori Muta, and Yasuo Tsukuda, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

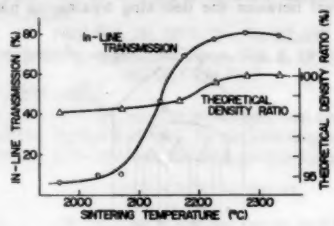
Filed Nov. 20, 1970, Ser. No. 91,369

Claims priority, application Japan, Nov. 21, 1969, 44/92936

Int. Cl. C04b *35/50*

U.S. Cl. 264—65 **6 Claims**

Finely divided Yttria having a purity of at least 99.99 percent is pressed into compacts, sintered in dry hydrogen or a partial vacuum to temperatures in the range of 2,150°–2,330° C, and refired in wet hydrogen at a temperature of from 1,950°–2,300C to reoxidize any yttria that was reduced to yttrium during sintering. A dense body transparent to visible light is produced. If a transparent article is not desired, the purity can be reduced.



3,764,644

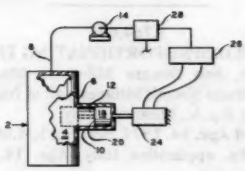
METHOD FOR FORMING A PROTRUSION ON A BLOW MOLDED ARTICLE

Leroy E. Robinson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1971, Ser. No. 139,041

Int. Cl. B29c *17/07*

U.S. Cl. 264—89 **3 Claims**



A method for blow molding an article having a necked portion or protrusion extending from the article. A plunger member moves a portion of a plasticized parison in a first direction while exerting a fluid force on the parison for blow molding said parison and then moves the portion of the parison in a second opposed direction while exerting said fluid force for forming a necked portion or protrusion having walls of substantially uniform thickness.

3,764,645

METHOD OF MOLDING COATED ARTICLES OF FIBROUS MATERIALS

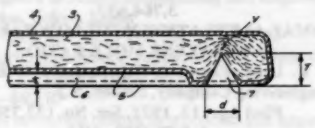
Edmund E. Munk, Oberstenfeld, Germany, assignor to Furnier-und Sperrholzwerk J. F. Werz Jr. K.G. Werzalit-Pressholzwerk Oberstenfeld, Stuttgart, Germany

Continuation-in-part of Ser. No. 820,809, May 1, 1969, abandoned. This application May 3, 1971, Ser. No. 139,535

Claims priority, application Germany, May 2, 1968, P 17 03 323.1

Int. Cl. B29 *5/04*

U.S. Cl. 264—112 **9 Claims**



A method of press-molding sheet-coated articles especially of a platelike shape from a mixture of comminuted fibrous

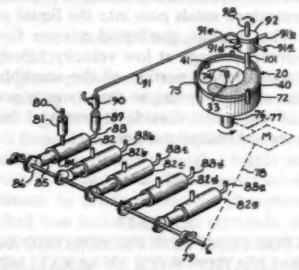
materials and a thermosetting binder by impressing conical or similar recesses in the normally lower side of the material for increasing especially during the hot-molding operation the rate of compression of the material within the marginal areas and especially the corner areas of the fibrous body of the article so as to prevent any shrinkage of the material while it is setting and thereby to insure that the covering sheet material will be firmly bonded to the fibrous body especially within these areas. The projections on the molding die for impressing the recesses also act as gripping means to prevent the shrinking of the material.

3,764,646

METHOD OF MAKING COMPARATOR COLOR WHEELS

Clifford C. Hach, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Division of Ser. No. 526,532, Feb. 10, 1966, Pat. No. 3,520,626. This application Apr. 22, 1970, Ser. No. 38,635
Int. Cl. B29c *21/00*
U.S. Cl. 264—162 **7 Claims**



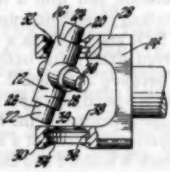
A method of depositing increments of colored resin in a groove formed in a groove formed in a surface of a transparent body, so that a color strip is formed in which at least one of three color properties, hue, value and chroma varies continuously along the length of the groove.

3,764,647

METHOD OF ASSEMBLING UNIVERSAL JOINT YOKE AND SPIDER

William R. McDow, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1970, Ser. No. 62,278
Int. Cl. B32b *1/00, 3/30*
U.S. Cl. 264—242 **8 Claims**



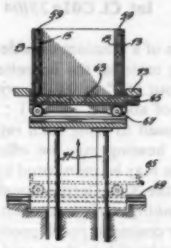
A yoke and spider assembly and its method of assembly is disclosed in which a spider is tilted and inserted into oversize bores in the yoke ears and bearing bushings are provided for the spider by a thermoplastic injection molded into the yoke ear bores.

3,764,648

METHOD AND DEVICE FOR THE MASS MANUFACTURE OF MODULAR CONCRETE UNITS

Henry Drupals, 5230 O'Bryan Ave., Montreal, Quebec, Canada

Filed May 7, 1970, Ser. No. 35,429
Int. Cl. B28b *1/16*
U.S. Cl. 264—256 **5 Claims**



A method of mass manufacturing modular units wherein a horizontal concrete slab is cast at a first level to form a base and thereafter raised to a second level where vertical concrete walls are cast over the base. The vertical concrete walls, once set over the base to form a modular unit, are lowered to the first level and the unit is removed whereby to make place for the casting of a further unit.

A device for carrying out the above method comprising a mold for casting a horizontal concrete slab at a first level to form a base. A second mold is mounted at a second level for the casting of vertical walls, this second mold having a lower open end. A hydraulic lift is provided to raise the first mold from the first to the second level and beneath the lower open end of the second mold whereby the vertical walls may be cast over the base. The hydraulic lift then lowers the base and vertical walls to the first level, the modular unit being then taken away to make place for the casting of a further modular unit.

3,764,649

PREPARATION OF AMMONIUM POLYTHIOMOLYBDATE

Charles R. Kurtak, Bishop, Calif., and Laurence D. Hartzog, Kearney, Ariz., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,990
Int. Cl. C01g *39/00*; C22b *49/00, 3/00*
U.S. Cl. 423—56 **1 Claim**

A novel composition of matter, ammonium polythiomolybdate, having the empirical formula $3MoS_4.2NH_4OH$.

3,764,650

RECOVERY OF GOLD FROM ORES

Bernard J. Scheiner, Sparks, and Roald E. Lindstrom, Reno, both of Nev., assignors to The United States of America as represented by the Secretary of Interior, Washington, D.C.

Filed Dec. 31, 1970, Ser. No. 103,286
Int. Cl. C01g *7/00*; C22b *11/06, 11/04*
U.S. Cl. 423—38 **3 Claims**

Gold is recovered from ores by slurrying the ores with an acid-salt mixture and treating the slurry with ozone, whereby the gold is extracted in the form of a chloride complex.

ERRATUM

For Class 423—63 see:
Patent No. 3,764,274

3,764,651

PRODUCTION OF TITANIUM DIOXIDE CONCENTRATES FROM MATERIALS CONTAINING ILMENITE

Hanno Henkel, Krefeld; Hans Zirngibl, Duisburg, and Jakob Rademachers, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 20, 1971, Ser. No. 135,767

Claims priority, application Germany, May 22, 1970, P 20 24 907.4

Int. Cl. C01g 23/04

U.S. Cl. 423—86 12 Claims

In the production of a titanium dioxide concentrate from an ilmenite-containing material the ilmenite-containing material is pretreated at about 600° to 900°C. with its Fe(II) : Fe(III) ratio in the range of about 5 : 1 to 1 : 18. An oxidizing atmosphere may be used to bring such ratio within the desired range and further heating may be effected in an inert atmosphere. The ratio may be monitored by measuring the magnetic properties or the X-ray lattice constants during pretreatment and discontinuing such treatment when the magnetic properties or lattice constants reach predetermined values.

The pretreated material is than acid leached to dissolve away undesired materials and leave concentrated titanium dioxide.

3,764,652

SOLVENT EXTRACTION OF GERMANIUM FROM ALUM SOLUTION

Kenneth A. Morgan, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 25, 1972, Ser. No. 229,567

Int. Cl. C01g 17/00, 17/04

U.S. Cl. 423—89 7 Claims

Germanium is extracted from an alum solution utilizing a hydrocarbon solution of a monosubstituted phosphoric acid as the extractant. The hydrocarbon solution is then back extracted with hydrofluoric acid.

3,764,653

CONTINUOUS PROCESS FOR SCRUBBING SO_2 FROM A GAS STREAM WITH H_2 REGENERATION

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 68,274, Aug. 31, 1970. This application June 24, 1971, Ser. No. 156,183. The portion of this patent subsequent to Jan. 18, 1989, has been disclaimed.

Int. Cl. C01b 17/00

U.S. Cl. 423—242 24 Claims

An input gas stream containing SO_2 is continuously treated in order to remove a substantial portion of the SO_2 therefrom by the steps of: (a) scrubbing the input gas stream with an aqueous absorbent stream containing an alkaline reagent; (b) treating the resulting rich absorbent stream with a reducing agent at conditions selected to convert the sulfite compound contained therein to the corresponding thiosulfate compound; (c) catalytically reacting the resulting thiosulfate compound with hydrogen at reduction conditions selected to produce the corresponding sulfide compound; (d) stripping hydrogen sulfide from the resulting solution to form a regenerated aqueous absorbent stream; and, thereafter, (e) passing at least a portion of the regenerated absorbent stream to the scrubbing step. The principal utility of this scrubbing process is associated with the problem of continuously removing a sulfur dioxide contaminant from the flue or stack gas streams such as are typically produced in modern electrical power generating stations in order to abate a serious pollution problem and to enable the safe, nonpolluting burning of high sulfur fuels. Key features of this process are: the selective conversion of the sulfite compound obtained from the scrubbing step to the corresponding thiosulfate compound in the preliminary treatment step, the subsequent reduction of the thiosulfate compound to the corresponding sulfide compound in a highly efficient economic and selective manner, the minimization of undesired sulfate by-products during both of these conversion steps and the use of a relatively cheap, continuously regenerated absorbent which has a high capacity for SO_2 as well as a high efficiency for SO_2 removal.

3,764,654

MULTI-STAGE REMOVAL OF ENTRAINED SOLIDS AND SULFUR DIOXIDE FROM GAS STREAMS

Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,465

Int. Cl. C01b 17/00

U.S. Cl. 423—242 8 Claims

A method of scrubbing a gas stream in venturi passages with an aqueous solution or slurry, in order to remove entrained solids such as fly ash as well as sulfur dioxide. Two venturi passages in series are provided, with the gas stream flowing through both passages. A minor portion of scrubbing liquid passes to the first passage, and a high gas velocity above 30 meters per second is maintained in the first passage, so that most of the entrained solids pass into the liquid phase in the first venturi. The resulting gas-liquid mixture flows through the second venturi passage at low velocity below 30 meters per second, and a major portion of the scrubbing liquid is passed into the second venturi, so that a major portion or essentially all of the sulfur dioxide is removed from the gas stream in the second venturi passage.

3,764,655

PROCESS FOR PURIFYING PHOSPHORIC ACIDS BY NEUTRALIZATION WITH AN ALKALI METAL HYDROXIDE AND/OR CARBONATE

Klaus-Peter Ehlers, Knapsack, and Heinz Harnisch, Lovenich, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, Germany

Filed July 16, 1971, Ser. No. 163,505

Claims priority, application Germany, July 17, 1970, P 20 35 505.9

Int. Cl. C01b 25/16, 15/16, 25/26

U.S. Cl. 423—309 9 Claims

Phosphoric acids produced by subjecting phosphate ores to wet-processing with mineral acids are purified by neutralizing them in a four step process by means of an alkali metal hydroxide and/or carbonate. In the first step, the crude phosphoric acids and the alkali metal hydroxide and/or carbonate are mixed together so as to produce a mixture with a pH-value of between 4 and 9, and resulting primary sludge consisting substantially of insoluble aluminum and iron phosphates is isolated from the purified phosphate solution. In the second step the sludge is mixed with a mixture consisting of alkali liquor (i.e. alkali metal hydroxide solution) and a trialkali phosphate solution and with a mixture consisting of water glass and a trialkali phosphate solution so as to produce a mash containing SiO_2 and Al_2O_3 in a molar ratio of larger than 2:1, and dissolved alkali metal oxide and dissolved P_2O_5 in a molar ratio of between 2.9:1 and 3.3:1. In the third step the second step mash is heated to temperatures of between 80° and 100° C and sludge appearing in the mash is disintegrated. This results in the formation firstly of a solution and secondly of a solid residue which is isolated and discarded. In the fourth step, the third step solution containing between 0.1 and 1.0 weight percent fluorine, is cooled to effect crystallization of a trialkali phosphate/alkali fluoride double salt, which is isolated from its mother liquor, and successively used for purifying a portion of the crude phosphoric acid with the resultant formation firstly of a secondary neutralization sludge, which is discarded, and secondly of a purified alkali phosphate solution, which is combined with alkali phosphate solution purified in the first step.

3,764,656

PREPARATION OF PHOSPHATES

Ronald H. Carlson, Willingboro, N.J., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 788,096, Dec. 30, 1968, abandoned. This application Feb. 25, 1972, Ser. No. 229,573

Int. Cl. C01b *15/16, 25/26*

U.S. Cl. 423—311 3 Claims

Phosphorus values are recovered from phosphate crystal mother liquor by contacting the liquor with finely divided calcium salts at elevated temperatures to precipitate hydrated octacalcium phosphate. Ca/P input is specific.

3,764,657

PROCESS FOR REMOVAL OF CATIONIC IMPURITIES FROM TECHNICAL GRADE PHOSPHORIC ACID

Klaus Frankenfeld, Kirberg/Taunus, and Karl Gotzmann, Budenheim/Rhine, both of Germany, assignors to Chemische Fabrik, Budenheim, Germany

Filed Sept. 21, 1971, Ser. No. 182,534

Claims priority, application Germany, Oct. 14, 1970, P 20 50 406.7

Int. Cl. C01b *25/16*

U.S. Cl. 423—321 6 Claims

Technical grade phosphoric acid is purified of cationic impurities by adding thereto alkali or ammonium ions and a water soluble organic solvent whereby a flaky, easily filterable precipitate is formed which is subsequently separated from the filtrate. The filtrate is passed through a highly acidic cationic exchange resin in the H+ form. The organic solvent is distilled from the filtrate to produce purified phosphoric acid. The source of alkali ions include gaseous ammonia, alkali and ammonium hydroxide and/or alkali and ammonium salts with the addition being of from 0.06 to 0.12 mols of alkali ions per mol of P_2O_5. The water soluble organic solvent is preferably isopropanol and is added in an amount of from two to five times the amount with respect to the raw phosphoric acid.

3,764,658

PRODUCTION OF FLUOSILICIC ACID

Charles D. Darwin, Lake Wales, Fla.; John D. Nickerson, Atlanta, Ga.; James E. Parsons, Lakeland, Fla., and Robert A. Wiesboeck, Stone Mountain, Ga., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1972, Ser. No. 220,893

Int. Cl. C01b *25/16*

U.S. Cl. 423—321 7 Claims

An improved process for the recovery of fluosilicic acid from recycle streams in the manufacture of phosphoric acid by the sulfuric acid digestion of phosphate ore.

3,764,659

PROCESS FOR THE PRODUCTION OF CALCIUM HEXACYANOFERRATE (II)

Helmut Reinhardt, Weiss, and Karl Trebiner, Wesseling, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt, Frankfurt am Main, Germany

Filed Nov. 2, 1970, Ser. No. 86,276

Claims priority, application Germany, Nov. 15, 1969, P 19 57 527.0

Int. Cl. C01c *3/12*

U.S. Cl. 423—367 8 Claims

Calcium hexacyanoferrate-(II) is prepared by suspending 1 mole of calcium carbonate in an aqueous solution of 1 mole of ferrous salt and reacting at 30° – 90° C. with 2 moles of hydrogen cyanide at a pH of 2 – 5 and then adding an aqeous suspension of 2 moles of calcium hydroxide and 4 moles of hydrogen cyanide at 30° – 90° C. at a pH of at least 8.

3,764,660

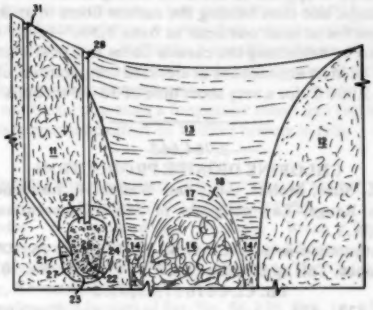
CHEMICAL PROCESSING IN GEOTHERMAL NUCLEAR CHIMNEY

Oscar H. Krikorian, Danville, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 17, 1971, Ser. No. 144,168

Int. Cl. C01c *1/04*; G21c *19/28*

U.S. Cl. 423—362 8 Claims



A closed rubble filled nuclear chimney is provided in a subterranean geothermal formation by detonation of a nuclear explosive device therein, with reagent input and product output conduits connecting the chimney cavity with appropriate surface facilities. Such facilities will usually comprise reagent preparation, product recovery and recycle facilities. Processes are then conducted in the nuclear chimney which processes are facilitated by temperature, pressure, catalytic and other conditions existent or which are otherwise provided in the nuclear chimney.

3,764,661

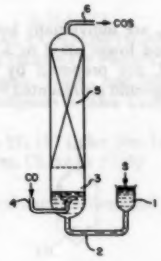
PROCESS FOR PREPARATION OF CARBONYL SULFIDE

Telichi Kanazawa, Shimizu; Shigeru Ogawa, Tokyo; Sadayoshi Matsui, Shimizu, and Masamichi Shimizu, Shizuoka-ken, all of Japan, assignors to Ihara Chemical Industry Co., Ltd. and Sagami Chemical Research Center, Tokyo, Japan, part interest to each

Filed Aug. 25, 1971, Ser. No. 174,911

Int. Cl. C01b *31/26*

U.S. Cl. 423—416 12 Claims



Carbonyl sulfide of high purity is obtained by reacting a mixture of carbon monoxide and sulfur at a moderate temperature using as a catalyst a water-free sulfide of certain metals.

3,764,662

PROCESS FOR MAKING CARBON FIBER

Benjamin W. Roberts, Jr., Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,134
Int. Cl. C01b *31/07*
U.S. Cl. 423—447 2 Claims

Carbon fibers made by a process which involves heating a polyacrylonitrile fiber to a temperature below its carbonization temperature in an oxidizing atmosphere, carbonizing the fibers in a nonoxidizing atmosphere, such that combined heat and tension is applied to the fiber during at least one of the above steps, and then heating the carbon fibers in an inert atmosphere for at least one hour at from 1,300°–1,800° C., are improved by subjecting the carbon fibers to a post-heat treatment in an inert atmosphere at elevated temperatures of about 2,300°–3,000 C. for a very short time of 30–90 seconds.

3,764,663

CHLORINE DIOXIDE PRODUCTION

Leslie L. Sims, Mobile, Ala., and Walter W. Lawrence, Jr., Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 55,581, July 16, 1970, abandoned. This application Oct. 31, 1972, Ser. No. 302,485
Int. Cl. C01b *11/02*, *7/02*
U.S. Cl. 423—478 6 Claims

A process for the manufacture of chlorine dioxide by the reaction of a non-oxidizable acid with chlorate and a chloride in the presence of a catalyst which is an ammonium salt.

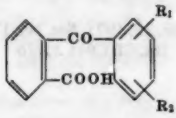
3,764,664

PROCESS FOR THE PRODUCTION OF ACTIVE ANHYDROUS ALUMINUM CHLORIDE

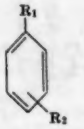
Hideaki Suda, Takaishi; Tatsuo Kanda, Toyonaka; Yoshiro Murata; Hiromu Hida, both of Minoo, and Toshio Kubo, Takarazuka, all of Japan, assignors to Sumitono Chemical Company, Limited, Osaka, Japan

Filed June 14, 1971, Ser. No. 153,029
Claims priority, application Japan, June 19, 1970, 45/53649; Apr. 21, 1971, 46/26259
Int. Cl. C01f *7/58*
U.S. Cl. 423—495 2 Claims

Aromatic ketocarboxylic acids represented by the formula,



wherein R_1 and R_2 are individually hydrogen, chlorine, or a straight or branched lower alkyl or a substituted or unsubstituted cycloalkyl, are prepared by reacting phthalic anhydride with a compound represented by the formula,



wherein R_1 and R_2 are as defined above, in the presence of a specific aluminum chloride catalyst. The specific aluminum chloride is prepared by reacting metallic aluminum with anhydrous hydrogen chloride using at least one member of trihalogenated benzenes as a solvent.

3,764,665

COMBINED SULFUR OXIDES ACCEPTANCE-SULFUR RECOVERY PROCESS

Willem Groenendaal, and Walter M. Lenz, both of The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,103
Claims priority, application Netherlands, Feb. 19, 1971, 7102211
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 10 Claims

An improved process for removing sulfur oxides from gas mixtures with a solid acceptor for sulfur oxides wherein the solid acceptor is regenerated with a steam-diluted reducing gas and the regeneration off-gas is fed to a Claus sulfur recovery process. The improvement comprises cooling the regeneration off-gas to condense the water vapor contained therein, contacting the cooled off-gas with a sulfur dioxide-selective liquid absorbent, passing the fat liquid absorbent to a buffer zone and then to a stripping zone wherein the absorbed SO_2 is recovered from the liquid absorbent and is supplied to the sulfur recovery process. By operating in this manner, fluctuations in the sulfur dioxide concentration of the regeneration off-gas are leveled-out and on relatively concentrated sulfur dioxide stream is supplied to the sulfur recovery process at a substantially constant rate.

3,764,666

PREPARATION OF ALUMINUM HYDRIDE

Jawad H. Murib, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 7, 1968, Ser. No. 750,743
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 28 Claims

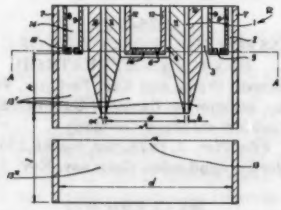
A process is provided for the preparation of aluminum hydride by the thermal decomposition of tertiary amine-alane adduct in the presence of a Group IA or Group IIA metal hydride or organometallic compound catalyst. The catalyst is preferably a complex metal hydride or organometallic catalyst containing the Group IA or Group IIA metal plus either aluminum or boron.

3,764,667

PROCESS FOR PRODUCING PIGMENT-QUALITY TITANIUM DIOXIDE

Meredith Wooldrige Thring, Buckhurst Hill, England; Dante Cadorin, and Aldo Ducato, both of Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed May 7, 1971, Ser. No. 141,266
Claims priority, application Italy, May 11, 1970, 24406 A/70
Int. Cl. C01g *23/04*
U.S. Cl. 423—613 2 Claims



An axial-type reactor for producing pigment-quality titanium dioxide is disclosed which comprises a reaction chamber and a plurality of spaced-apart concentric tubes which define a plurality of concentric passages for introducing at their exit end into the upstream end of the reaction chamber gaseous $TiCl_4$, O_2 and CO, and wherein the tubes which define the

passage for $TiCl_4$ protrude into said reaction chamber a greater distance than the other tubes, thereby locating the exit end of said $TiCl_4$ passage downstream with respect to the exit ends of the other passages. The corresponding process is also disclosed.

3,764,668

COMPOSITIONS OF SALTS OF SALICYLAMIDE

Takeru Higuchi, and Anwar Hussain, both of Lawrence, Kans., assignors to Interx Corporation, Lawrence, Kans.

Continuation-in-part of Ser. Nos. 22,049, March 23, 1970, abandoned, and Ser. No. 77,010, Sept. 30, 1970, Pat. No. 3,676,549. This application May 1, 1972, Ser. No. 249,007

Int. Cl. A61k 9/00

U.S. Cl. 424—44 **4 Claims**

Pharmaceutical compositions of alkali metal salts of salicylamide are orally administered with significantly improved analgesic, anti-inflammatory, antipyretic and sedative results, as compared with solid oral dosage forms of both salicylamide and the alkali or alkaline earth metal salts of salicylamide. The compositions are administered as solutions formed by dissolving in an aqueous media a composition comprised of a unit dosage amount of an alkali metal salt of salicylamide, an effervescent couple and a nucleating inhibitor.

3,764,669

METHOD OF MAKING MICROBIOCIDAL COMPLEXES

Salvatore L. Santorelli, 160-14 Tenth Ave., Whitestone, N.Y.

Continuation-in-part of Ser. No. 754,098, Aug. 12, 1968, which is a continuation of Ser. No. 507,515, Nov. 12, 1965, abandoned, which is a continuation-in-part of Ser. No. 431,714, Feb. 10, 1965, abandoned, which is a continuation-in-part of Ser. No. 220,907, Aug. 31, 1962, abandoned, which is a continuation-in-part of Ser. No. 852,174, Nov. 12, 1959, abandoned, which is a continuation-in-part of Ser. No. 773,809, Nov. 14, 1958, abandoned. This application Nov. 2, 1970, Ser. No. 66,583

Int. Cl. A61k 7/27

U.S. Cl. 424—80 **7 Claims**

The present invention is directed to a complex compound consisting of a complex combination of salicylic acid, iodine and a mercurial. The complex compound is further identified as salicylic acid in combination with polyvinylpyrrolidone-iodine or iodine/sodium iodide and sodium ethylmercurithiosalicylate or sodium dibromoxymercurifluorescein. These compounds have indicated fungicidal and bactericidal activity when applied topically.

3,764,670

POLYPEPTIDIC ANTI-BIOTIC SUBSTANCES DERIVED FROM CASEIN

Aharon Katzirkatchalsky, Tel Aviv; Eitan Lahav, Rishon-le-Zion, both of Israel, and Mogens Torben Sode-Morgensen, Copenhagen, Denmark, assignors to The State of Israel, Ministry of Agriculture, Jerusalem, Israel

Continuation-in-part of Ser. No. 608,747, Jan. 12, 1967, abandoned. This application Oct. 28, 1970, Ser. No. 84,765

Int. Cl. A61b 27/00

U.S. Cl. 424—118 **4 Claims**

A group of novel antibiotic polypeptidic substances obtained by the reaction of casein with a proteolytic enzyme at a pH of 6 to 7.

3,764,671

ANTIBIOTIC SL 3440

Annemarie Closse, Binningen, and Hans Hermann Thiele, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 18,534, Mar. 11, 1970, abandoned. This application Oct. 28, 1971, Ser. No. 193,525

This application Oct. 28, 1971, Ser. No. 193,525

Claims priority, application Switzerland, Mar. 18, 1969, 4019/69

Int. Cl. A61k 21/00

U.S. Cl. 424—122 **4 Claims**

The invention concerns a new antibiotic SL 3440 having the following characteristics: a colourless, viscous oil having the empirical formula $C_{28}H_{36}N_4O_6$, a specific rotation of $[\alpha]_D^{20} = -127.7°$ ($c = 1.0$ in benzene) and showing characteristic ultraviolet and infrared spectrums.

The antibiotic possesses a fungistatic effect and furthermore exhibits a cytostatic effect on Walker tumors in rats.

3,764,672

COMPOSITION AND PROCESS OF TREATMENT USING LINCOMYCIN DERIVATIVES

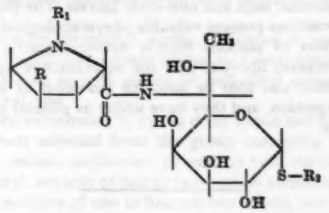
Alexander D. Argoudelis, Portage; Brian Bannister, Kalamazoo; Fred Kagan, Kalamazoo, and Barney J. Magerlein, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 56,238, Feb. 16, 1970, abandoned, which is a continuation of Ser. No. 833,860, June 2, 1967, abandoned, which is a continuation of Ser. No. 731,683, May 17, 1968, abandoned, which is a continuation of Ser. No. 628,541, April 5, 1967, abandoned, Continuation-in-part of Ser. No. 506,128, Nov. 2, 1965, abandoned, which is a continuation-in-part of Ser. Nos. 387,776, Aug. 4, 1964, Pat. No. 3,366,624, and Ser. No. 463,934, June 4, 1965, Pat. No. 3,380,992. This application Feb. 4, 1972, Ser. No. 223,756

Int. Cl. A61k 21/00

U.S. Cl. 424—181 **6 Claims**

Compounds having the formula



wherein R is alkyl of four, five, or six carbon atoms, R_1 is methyl or ethyl, and R_2 is methyl or ethyl in combination with a pharmaceutical carrier.

3,764,673

PHARMACEUTICAL COMPOSITIONS COMPRISING ALKYLSILYL ETHERS OF PROSTAGLANDINS

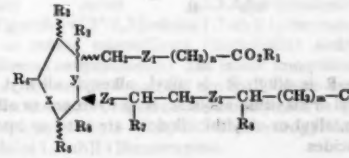
Niels H. Andersen, Seattle, Wash., and Ned M. Weinshenker, Sunnyvale, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Feb. 19, 1971, Ser. No. 117,050

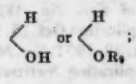
Int. Cl. A61k 27/00

U.S. Cl. 424—184 **16 Claims**

Novel pharmaceutical compositions comprising compounds of the formula:

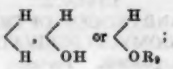


wherein R_1 is hydrogen, a lower alkyl or R_9; R_2 and R_6 are both hydrogen when *y* is single bond and R_2 and R_6 are both absent when *y* is a double bond; R_3 is keto,



R_4 is hydrogen or

R_5 is hydrogen,



R_7 is OR_9; R_8 is hydrogen or OR_9; R_9 is

wherein

R_{10} is hyrogen or lower alkyl; R_{11} and R_{12} are the same or different lower alkyl; Z_1 is a cis or trans —CH=CH— or —CH_2CH_2—; Z_2 is trans —CH=CH— or —CH_2CH_2—; *x* is a single or double bond and *x* is a double bond when R_4 and R_5 are hydrogen; *y* is a single or double bond; *n* is 2 to 5; *m* is 0 to 4; the non-toxic salts and non-toxic carrier. The pharmaceutical compositions possess valuable pharmacological properties as modifiers of smooth muscle activity, gastric secretion, blood pressure, lipolysis and the reproductive system. The compositions can also be used for the relief of asthma and nasal congestion, and they have utility as platelet anti-clumping agents.

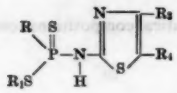
3,764,674

PHOSPHONAMIDO THIAZOLES AND THEIR UTILITY AS INSECTICIDES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 198,012, Oct. 29, 1971, Pat. No. 3,723,450. This application Dec. 11, 1972, Ser. No. 313,702
Int. Cl. A01n 9/36
U.S. Cl. 424—200 **35 Claims**

Compounds of the formula



in which R is alkyl; R_1 is alkyl, alkenyl, alkynyl, benzyl, cyanoalkyl or alkylthio-alkylene; R_3 is hydrogen or alkyl; R_4 is hydrogen, alkyl or alkylthioalkylene are used as insecticides and acaricides.

3,764,675

METHOD OF TREATMENT OF CARDIAC BRADYARRHYTHMIAS

Leon I. Goldberg, Atlanta, Ga., assignor to Arnar-Stone Laboratories, Inc., Mt. Prospect, Ill.

Filed Sept. 27, 1972, Ser. No. 292,665
Int. Cl. A61k 27/00
U.S. Cl. 424—267 **6 Claims**

A method is disclosed for the treatment of cardiac bradyarrhythmias, i.e., slow, maladjusted heart rhythms and frequencies which often occur in heart block. It comprises intravenously administering therapeutic amounts of scopolamine methylbromide in order to increase the heartbeat frequency without causing certain undesirable side effects.

3,764,676

DIETHYL CYANOMETHYL PHOSPHONATE AS AN ANTIMICROBIAL AGENT

Al F. Kerst, and John D. Douros, Jr., both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Oct. 28, 1970, Ser. No. 84,905
Int. Cl. A01n 9/36
U.S. Cl. 424—210 **52 Claims**

Diethyl cyanomethyl phosphonate can be used to inhibit and/or prevent the growth of undesirable algae, bacteria, fungi, yeast, and other microorganisms. This invention is particularly concerned with the bacteriostatic and bactericidal properties of diethyl cyanomethyl phosphonate compounds against species of Proteus, Salmonella, Shigella, Staphylococcus and Xanthomonas.

3,764,677

DIETHYL BETAAMINOETHYLPHOSPHONATE AS AN ANTIMICROBIAL AGENT

Al F. Kerst, and John D. Douros, Jr., both of Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed June 25, 1971, Ser. No. 156,940
Int. Cl. A01n 9/36
U.S. Cl. 424—211 **43 Claims**

Diethyl betaaminoethylphosphonate can be used to inhibit and/or prevent the growth of undesirable algae, bacteria, fungi, yeast, and other microorganisms. This invention is particularly concerned with the bacteriostatic and bactericidal properties of diethyl betaaminoethylphosphonate compounds against species of *Proteus, Salmonella, Shigella, Staphylococcus* and *Xanthomonas.*

3,764,678

ORGANOTIN-SUBSTITUTED S-TRIAZINES FOR CONTROLLING INSECTS, ACARINAL, FUNGI, BACTERIA, AND MOLLUSKS

Enrico Knusli, Riehen, and Denis Varsanyi, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 661,188, Aug. 17, 1967, abandoned, which is a continuation-in-part of Ser. No. 469,893, July 6, 1965, abandoned. This application Apr. 21, 1970, Ser. No. 30,581
Int. Cl. A01n 9/22
U.S. Cl. 424—245 **31 Claims**

Pesticidal compositions containing as active substances organotin substituted s-triazines which possess insecticidal, acaricidal, ovicidal, fungicidal, bactericidal, bacteriostatic, molluscacidal and algaecidal activity are disclosed. Also methods for controlling pests on using said compositions are described.

3,764,679

IODININ AS AN ANTI-HYPERTENSIVE AGENT

Peter Hadley Jones, Lake Forest, and Pitambar Somani, Village of Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 20, 1972, Ser. No. 236,179
Int. Cl. A61k 27/00
U.S. Cl. 424—250 1 Claim

A method of reducing blood pressure in hypertensive patients by administering a therapeutically effective amount of iodinin to said patients.

3,764,680

METHOD FOR TREATING THE TOBACCO SMOKING HABIT

Jack E. Phillips, 3470 Atlantic, N.E., Warren, Ohio

Continuation of Ser. No. 86,275, Nov. 2, 1970, Pat. No. 3,639,607. This application May 26, 1971, Ser. No. 147,200
Int. Cl. A61k 27/00
U.S. Cl. 424—254 1 Claim

Treatment with an anticonvulsant drug, preferably one effective to prevent or retard grand mal and/or petit mal seizures in epileptic patients, allows a tobacco smoker to materially reduce, and in many instances totally eliminate, his smoking habit. During withdrawal, the normally accompanying anxiety is reduced or eliminated by the use of such a drug.

3,764,681

CERTAIN TETRAZOLO-(1,5-A) QUINOLINE COMPOUNDS AS FUNGUS CONTROL AGENTS

Barry A. Dreikorn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 8, 1970, Ser. No. 53,320
Int. Cl. A01n 9/22
U.S. Cl. 424—258 26 Claims

Methods employing and compositions comprising, for the control of plant-pathogenic fungal organisms, specified tetrazolo-(1,5-a)quinoline compounds.

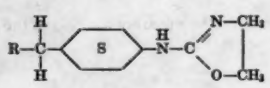
3,764,682

IRRITANT COMPOSITION COMPRISING 2-(4 SUBSTITUTED CYCLOHEXYLAMINO)-2-OXAZOLINES

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 635,303, April 20, 1967, which is a continuation-in-part of Ser. No. 574,496, Aug. 18, 1966. This application Oct. 24, 1968, Ser. No. 770,452
Int. Cl. A01n 9/22
U.S. Cl. 424—272 9 Claims

Repelling animals with 2-(4-substituted cyclohexylamino)-2-oxazolines of the formula:



wherein

R is alkyl, cycloalkyl, cycloalkylalkyl, bicycloalkyl or tricycloalkyl.

Typical is 2-(cis-4-cyclohexylmethylcyclohexylamino)-2-oxazoline, useful as an animal repellant.

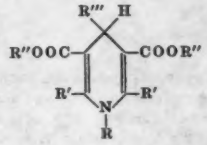
3,764,683

COMPOSITION AND METHOD FOR EFFECTING CORONARY DILATION USING CYANOPHENYL-1,4-DIHYDROPYRIDINE DERIVATIVES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 97,338, Dec. 10, 1971, Pat. No. 3,691,177. This application Aug. 6, 1971, Ser. No. 169,825
Claims priority, application Germany, Dec. 17, 1969, P 19 63 188.0
Int. Cl. A61k 27/00
U.S. Cl. 424—263 30 Claims

Cyanophenyl-1,4-dihydropyridine derivatives of the formula:



wherein

R is hydrogen, saturated or unsaturated, straight, branched or cyclic alkyl of 1 to 6 carbon atoms, unsubstituted or substituted by hydroxyl or alkoxy of one to three carbon atoms, or benzyl or phenethyl unsubstituted or substituted in the aryl moiety by 1, 2 or 3 members selected from the group consisting of one to three alkoxy moieties of one to three carbon atoms, one or two alkyl moieties of one to three carbon atoms and one or two halogen atoms,

R′ is straight or branched chain alkyl of one to four carbon atoms,

R″ is straight, branched, cyclic, saturated or unsaturated alkyl of one to six carbon atoms, said alkyl interrupted by one or two oxygen atoms or said alkyl substituted by hydroxyl, and

R‴ is aryl substituted by cyano or by cyano and one to nine members selected from the group consisting of cyano, nitro, amino, acylamino of one to two carbon atoms, hydroxyl, acyloxy of one to two carbon atoms, one or two alkyl moieties of one to four carbon atoms, one or two alkoxy moieties of one to four carbon atoms, and one or two halogen atoms,

are useful for their coronary dilating effect and antihypertensive effects. Processes for the production of these compounds are set forth below.

3,764,684

NOVEL INDOLOBENZAZEPINE DERIVATIVES, USEFUL AS TRANQUILIZERS

Michael Finizio, 85-14 163rd Ave., Howard Beach, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,990
Int. Cl. A61k 27/00
U.S. Cl. 424—263 9 Claims

Certain novel 1,2,3,4,8,9-hexahydro-3-(substituted)pyrido[4′,3′:2,3]indolo[1,7-ab][1]-benzazepines are useful as minor tranquilizers (anxiolytics) and/or major tranquilizers (antipsychotics). The minor tranquilizers are effective at non-ataxic doses, and are not likely to cause addiction when abused. A representative compound in this class is 3-(cyclopropylmethyl)-1,2,3,4,8,9-hexahydropyrido[4′,3′:2,3]indolo[1,7-ab][1]benzazepine.

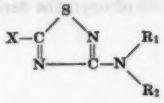
3,764,685

CERTAIN THIADIAZOLES AS FUNGICIDES

John Krenzer, Oak Park, and Sidney B. Richter, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 678,531, Oct. 27, 1967, abandoned. This application Sept. 8, 1970, Ser. No. 70,200
Int. Cl. A01n 9/12
U.S. Cl. 424—270 1 Claim

A compound of the formula



wherein X is halogen, R_1 and R_2 are each selected from the group consisting of hydrogen, an aliphatic radical, a cycloaliphatic radical, aralkyl, aryl, acyl and trihalomethylmercapto and form a hydrocarbon heterocyclic ring with the nitrogen atom to which they are attached. The compounds are fungicidal.

3,764,686

MIXTURES OF 1-(BUTYLACARBAMOYL)-2-BENZIMIDAZOLECARBAMIC ACID, METHYL ESTER AND ETHYLENEBISDITHTOCARBAMIC ACID SALTS AS FOLIAR FUNGICIDES

Charles J. Delp, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 783,400, Dec. 12, 1968, abandoned. This application Aug. 25, 1970, Ser. No. 66,874
Int. Cl. A01n 9/22, 9/02
U.S. Cl. 424—273 4 Claims

Mixtures of 1-(butylcarbamoyl)-2-benzimidazole-carbamic acid, methyl ester with the manganous or zinc salts of ethylenebisdithiocarbamic acid, i.e., maneb or zineb, show more than an additive effect as foliar fungicides.

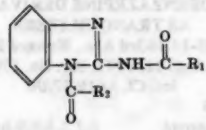
3,764,687

INHIBITING FUNGAL GROWTH WITH 2-BENZIMIDAZOLE ALKYL CARBAMATES

Don R. Baker, Orinda; Julius J. Menn, Saratoga, and Ashley H. Freiberg, Santa Clara, all of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 30,984, April 22, 1970, Pat. No. 3,658,812. This application Sept. 3, 1971, Ser. No. 177,872
Int. Cl. A61k 27/00; A01n 9/22
U.S. Cl. 424—273 4 Claims

Compounds corresponding to the formula



wherein R_1 is selected from alkoxy and alkoxyalkyl; R_2 is selected from alkyl, aryl, alkenyl, thioalkyl, alkylaryl, haloalkyl, cycloalkyl, haloalkenyl, alkoxyalkyl, alkenylaryl, furanyl and carboalkoxy are useful as fungicides.

3,764,688

4,6-DIHYDRO-1,3-DIMETHYL-8-PHENYL-4-PROPARGYL-PYRAZOLO [4,3-e] DIAZEPIN-5 (1H) ONE IN TREATING INFLAMMATION

Leo Ralph Swett, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 69,465, Sept. 3, 1970, abandoned. This application July 27, 1972, Ser. No. 275,858
Int. Cl. A61k 27/00
U.S. Cl. 424—274 2 Claims

4,6-Dihydro-1,3-dimethyl-8-phenyl-4-propargyl-pyrazolo[4,3-e] [1.4]diazepin-5(1H) one as an anti-inflammatory agent.

3,764,689

2,2,3,4,5,5-HEXACHLORO-2,5-DIHYDROTHIOPHENE 1,1 DIOXIDE USED TO CONTROL BACTERIA AND FUNGI

Don Robert Baker, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 863,320, Oct. 2, 1969, Pat. No. 3,666,773. This application Jan. 14, 1971, Ser. No. 106,535
Int. Cl. A01n 9/12
U.S. Cl. 424—275 1 Claim

The compound 2,2,3,4,5,5-hexachloro 2,5-dihydrothiophene-1,1 dioxide used to control bacteria and fungi.

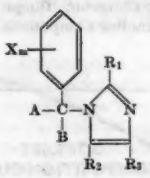
3,764,690

SUBSTITUTED N-BENZYLIMIDAZOLES AS ANTIMYCOTIC AGENTS

Wilfried Draber, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Karl-Heinz Buchel, and Manfred Plempel, both of Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 16,219, March 4, 1970. This application Mar. 3, 1972, Ser. No. 231,730
Int. Cl. A61k 27/00
U.S. Cl. 424—273 10 Claims

Substituted N-benzylimidazoles of the formula:



wherein

R_1, R_2 and R_3 are each hydrogen, straight or branched chain lower alkyl or straight or branched chain lower alkenyl,

X is hydrogen, lower alkyl, lower alkoxy, lower alkylmercapto, lower alkenylmercapto, trifluoromethyl, halogen, nitro, cyano, amino or amino substituted by 1 or 2 aliphatic moieties,

m is 1 or 2,

A is phenyl; substituted phenyl, pyridyl, lower alkyl or cycloalkyl,

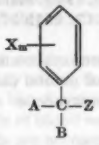
B is a 5-membered heteroaromatic ring of the formula:

wherein

D is CH or N,

E is oxygen, sulphur, N-lower alkyl or N-aryl,

Y is hydrogen, 1 or 2 lower alkyls, 1 or 2 halogens, aryl or substituted aryl, and
n is 1 or 2,
are produced by reacting a compound of the formula:



wherein A, B, X and *m* are as above defined and Z is chlorine or bromine, with at least the theoretically necessary amount of imidazole, optionally in the presence of an acid acceptor, in a polar organic solvent, at a temperature of from 20° to 150°C. These substituted N-benzylimidazoles are useful as antimycotics and are effective against both yeasts and dermatophytes. These compounds are effective against a wide range of fungi pathogenic to humans and animals.

3,764,691

ANORECTIC COMPOSITIONS CONTAINING N-THIENYLALKY-B-ALKOXY-TRIFLUOROMETHYLPHENYLALKYL-AMINES AND METHODS OF USE

John J. Lafferty, Levittown, and Charles L. Zirkle, Berwyn, both of Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 72,111, Sept. 14, 1970, Pat. No. 3,709,913. This application Sept. 28, 1972, Ser. No. 293,277
Int. Cl. A61k *27/00*
U.S. Cl. 424—275 **11 Claims**

N-Thienyalkyl-β-alkoxy-trifluoromethylphenalkylamines having anorectic activity are prepared by condensation of an N-thienylalkylamine with a β-alkoxy-trifluoromethylphenalkyl halide.

3,764,692

METHOD OF TREATING OBESITY

John M. Lowenstein, Wellesley Hills, Mass., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 872413, Oct. 29, 1969, abandoned. This application Sept. 30, 1970, Ser. No. 77,042
Int. Cl. A61k *27/00*
U.S. Cl. 424—279 **12 Claims**

The inhibition of fatty acid synthesis is obtained in biological systems by utilizing a specific stereoisomer of hydroxycitric acid and derivatives thereof such as esters or lactones and the non-toxic salts of these compounds. It is believed that the present method involves the inhibition of citrate cleavage enzyme. Inhibition of fatty acid synthesis by the present method is useful in the treatment of obesity.

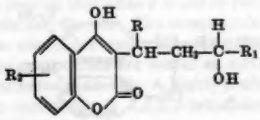
3,764,693

RODENTICIDAL COMPOSITIONS CONTAINING 4-HYDROXY COUMARINS

Eugene Boschetti, Venissieux; Darius Molho, Boulogne-sur-Seine, and Louis Fontaine, Lyon, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyon, France

Division of Ser. No. 878,876, Nov. 21, 1969, Pat. No. 3,651,091. This application Mar. 10, 1971, Ser. No. 123,094
Int. Cl. A01n *9/28*
U.S. Cl. 424—281 **10 Claims**

The 4-hydroxy coumarins are represented by the formula



in which R is a member of the group formed by hydrogen, the phenyl, halophenyl, dihalophenyl, nitrophenyl, methoxyphenyl, tolyl, methylene dioxyphenyl and furyl radicals;
R_1 is a member of the group formed by the methyl, phenyl, halophenyl, nitrophenyl, diphenyl, halodiphenyl, nitrodiphenyl and naphthyl radicals; and
R_2 is hydrogen or a halogen.

These new 4-hydroxy coumarins have very powerful oral anticoagulating actions of the antivitamin K type and are useful as rodenticides.

3,764,694

ANTICOCCIDIOSIS METHOD AND COMPOSITIONS

Frederick K. Kirchner, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 826,685, May 21, 1969, Pat. No. 3,651,057. This application Sept. 29, 1970, Ser. No. 76,621
Int. Cl. A61k *27/00*
U.S. Cl. 424—285 **6 Claims**

A series of 5-nitro-2-furaldehyde benzene-,α-toluene-, halobenzene- and alkylbenzenesulfonylhydrazones, useful for preventing and suppressing coccidiosis in poultry, are prepared by the condensation of 5-nitrofuraldehyde with the appropriate sulfonylhydrazide.

3,764,695

INSECTICIDAL COMPOUNDS AND METHODS OF COMBATTING INSECTS USING PHENYL-N-(1-ALKENYL)-METHYLCARBAMATES

John Paul Chupp, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 16, 1970, Ser. No. 20,044
Int. Cl. A01n *9/20*
U.S. Cl. 424—300 **10 Claims**

Phenyl-N-(1-alkenyl)-N-methylcarbamates and their use as insecticides.

3,764,696

COMBATTING BACTERIA WITH DIPHENYL THIOCARBONATES

Walter Traber, Riehen, and Anton G. Weiss, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 747,801, July 26, 1968, Pat. No. 3,637,790. This application Aug. 2, 1971, Ser. No. 168,387
Claims priority, application Switzerland, Aug. 1, 1967, 10856/67
Int. Cl. A01n *9/12*, *9/24*
U.S. Cl. 424—301 **15 Claims**

Certain diphenyl thiocarbonates in which one alcohol moiety consists of an optionally substituted phenoxyphenyl radical and the other alcohol moiety consists of an optionally substituted phenyl or phenoxyphenyl radical, are disclosed as useful antibacterial agents.

3,764,697

METHOD OF USING DI-, TRI- AND TETRACHLOROBENZONITRILES FOR CONTROLLING HELMINTHS

Gordon Paul Poeschel, Pennington, and John Anthony Pankavich, Hamilton Square, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 19, 1972, Ser. No. 245,383
Int. Cl. A61k *27/00*
U.S. Cl. 424—304 **9 Claims**

A method of using di-, tri- and tetrachlorobenzonitriles is described. They are useful in controlling helminths in warm-blooded animals particularly trematodes of the family *Fasciolidae*.

3,764,698

INSECTICIDES COMPOSITIONS AND METHODS EMPLOYING 3,4, SUBSTITUTED PHENYLMETHYLSULFINATES

Richard D. Partos, Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed May 21, 1970, Ser. No. 39,528
Int. Cl. A01n 9/14; C07c 145/00
U.S. Cl. 424—303 6 Claims

Substituted phenyl sulfinates are used as insecticides.

3,764,699

METHODS FOR RELIEVING BRONCHIAL SPASM WITH PROSTAGLANDIN-F AND DERIVATIVES

Marvin E. Rosenthale, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,304
Int. Cl. A61k 27/00
U.S. Cl. 424—305 4 Claims

Prostaglandin-$F_{2\beta}$, 7-[3α,5β-dihydroxy-2-(3-hydroxy-1-octenyl)cyclopentyl]-5-heptenoic acid, its esters, alkali metal salts, and amine salts provide potent and non-toxic compositions and methods for relieving bronchial spasm and facilitating breathing in warm-blooded animals. Administration by the oral inhalation route is particularly efficacious.

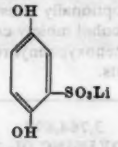
3,764,700

TREATMENT OF THE CIRCULATORY SYSTEM WITH THE LITHIUM SALT OF HYDROQUINONE SULFONIC ACID

Antonio Esteve-Subirana, Barcelona, Spain, assignor to Laboratories OM Societe Anonyme, Meyrin, Switzerland

Division of Ser. No. 771,977, Oct. 30, 1968, Pat. No. 3,629,327, which is a continuation-in-part of Ser. No. 600,721, Dec. 12, 1966, Pat. No. 3,509,207, which is a continuation-in-part of Ser. No. 202,981, June 18, 1962, Pat. No. 3,354,201, which is a continuation-in-part of Ser. No. 2, Jan. 4, 1960, abandoned. This application Mar. 29, 1971, Ser. No. 129,154
Claims priority, application Switzerland, Nov. 9, 1967, 15692/67; Nov. 9, 1967, 15693/67
Int. Cl. A61k 27/00
U.S. Cl. 424—315 2 Claims

The lithium salt of hydroquinone sulfonic acid of the formula



has therapeutic value for normalizing or reducing the abnormal permeability of the capillary wall of blood vessels of a person or animal having capillar fragility, and also for treating affections relative to blood coagulation. This novel salt can be prepared by reacting p-benzoquinone with lithium bisulfite in a solvent, or by reacting the potassium salt of hydroquinone sulfonic acid with a lithium salt of an inorganic or organic acid in a solvent wherein the lithium salt of hydroquinone sulfonic acid is soluble and wherein the potassium salt formed as a byproduct is slightly or not soluble.

3,764,701

METHOD

Jean-Claude Denis, and Jerome Rambaud, both of Paris, France, assignors to Paul Coirre, Ville d'Avray, France

Filed Feb. 10, 1969, Ser. No. 798,180
Int. Cl. A61k 27/00
U.S. Cl. 424—317 1 Claim

Lithium parachlorophenoxyacetate is a novel medicament active in the treatment of mental diseases. It is prepared by reacting parachlorophenoxyacetic acid with lithium carbonate.

3,764,702

TREATMENT OF THROMBOSIS

Charles Malen, Fresnes Village; Bernard Danree, St-Germain-en-Laye Village, and Pierre Desnoyers, Fontenay-aux-Roses Village, all of France, assignors to Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

Filed Dec. 7, 1970, Ser. No. 95,957
Claims priority, application Great Britain, Dec. 16, 1969, 61,279/69
Int. Cl. A61k 27/00
U.S. Cl. 424—317 2 Claims

Pharmaceutical composition containing therapeutically active 3-(parafluorobenzyloxy) benzoic acid successfully used in the treatment of thrombosis.

3,764,703

AMINO ACID MIXTURE FOR USE IN TREATMENT OF UREMIC CONDITIONS

Lars Jonas Bergstrom, Ekero; Nils Harje Bucht, Gothenburg; Erik Helmer Hultman, Viggbyholm; Bertil August Josephson; Erik Vinnars, both of Stockholm; David Georg Dahlinder, Sodertalje, and Peter Furst, Sollentuna, all of Sweden, assignors to Aktiebolag Astra, Sodertalje, Sweden

Continuation-in-part of Ser. No. 820,638, April 30, 1969, abandoned. This application Nov. 3, 1970, Ser. No. 86,625
Claims priority, application Sweden, Nov. 7, 1969, 15280/69
Int. Cl. A61k 27/00
U.S. Cl. 424—319 34 Claims

A mixture intended for nitrogen nutrition is disclosed which contains as a source of nitrogen a mixture of essential amino acids optionally combined with certain semi-essential amino acids. The mixture may be administered in either tablet or solution form to the patient and causes a lowering in blood urea nitrogen in combination with a positive nitrogen accumulation.

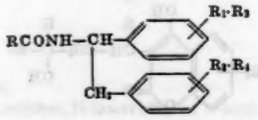
3,764,704

AMIDE DERIVATIVES HAVING ANTIATHEROSCLEROSIS ACTION

Yasushi Nakamura, Ibaragi; Michio Kimura, Minoo; Yoshio Suzuki, Amagasaki; Noritaka Hamma, Nishinomiya; Toshitsugu Fukumaru, Kyoto; Shunji Aono, Toyonaka, and Hideaki Fukushima, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Division of Ser. No. 819,351, April 25, 1969, Pat. No. 3,597,458, which is a continuation-in-part of Ser. No. 794,038, Jan. 27, 1969, abandoned. This application Apr. 6, 1971, Ser. No. 131,768
Int. Cl. A61k 27/00
U.S. Cl. 424—324 2 Claims

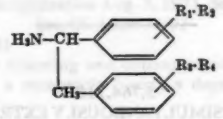
Amide compounds having antiatherosclerosis actions which are represented by the formula;



wherein R represents a C_{15}–C_{25}, straight chain or branched-chain, natural or synthetic, saturated or unsaturated aliphatic group having or not having hydroxyl group; R_1, R_2, R_3 and R_4 represent individually a hydrogen atom, a lower alkyl group, a lower alkoxy group or a halogen atom but cannot be hydrogen atoms at the same time.

The above-mentioned amide compounds can be used as drugs. They can be used by adding them to food-stuff additives such as butter and the like for prventing the deposition of cholesterol onto the walls of blood vessels.

The amide compounds are prepared by reacting fatty acids, reactive derivatives thereof, fatty acid halides, fatty acid anhydrides, fatty acid esters or glycerides with racemic, *d*- or *l*-amines represented by the formula



wherein R_1, R_2, R_3 and R_4 are as defined above.

3,764,705

1-BROMO2,2,2-TRIFLUOROETHYL DIFLUOROMETHYL ETHER AS AN INHALATION ANESTHETIC

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Filed May 3, 1971, Ser. No. 139,862
Int. Cl. A61b *27/00*
U.S. Cl. 424—342 **3 Claims**

The novel compound 1-bromo-2,2,2-trifluoroethyl difluoromethyl ether having the formula $CF_3CHBr\text{-}O\text{-}CHF_2$ is prepared through bromination of 2,2,2-trifluoroethyl difluoromethyl ether. The brominated compound is useful as an inhalation anesthetic and as a solvent and dispersant for fluorinated materials.

3,764,706

INHALATION ANESTHETIC

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,954
Int. Cl. A61k *27/00*
U.S. Cl. 424—342 **2 Claims**

This disclosure is directed to novel ethers of the formula:

$$CF_3CH_aX_b\text{-}O\text{-}CF_cCH_dF_eCl_e$$

wherein X is fluorine, chlorine or bromine, preferably fluorine, *a* is one or two, *b* is zero or one, *a* plus *b* are two, preferably both *a* and *b* being one, *c* is zero or one, *d* is zero to two, *e* is zero to two, *c* plus *d* plus *e* are three, preferably each of *c*, *d*, and *e* is one, and *a* plus *c* are one or two, preferably two, with the proviso that when *e* is one or two, X is fluorine or bromine, preferably fluorine. The compounds having less than eight fluorine atoms per molecule are useful as anesthetics, and all of the compounds are useful as solvents and dispersants for fluorinated materials. A highly preferred compound useful as an anesthetic is 1,2,2,2-tetrafluoroethyl 1′,1′,2′-trifluoro-2′-chloroethyl ether.

3,764,707

ALGIN SALT-MANNOGALAC- FOR GUM CONTAINING AQUEOUS COSMETIC LOTION

Francis Habersberger, Westfield, N.J., assignor to Marine Colloids, Inc., Springfield, N.J.

Filed Mar. 4, 1970, Ser. No. 16,581
Int. Cl. H61k *7/00*
U.S. Cl. 424—361 **3 Claims**

An improved cosmetic lotion having desirable rheology is disclosed as comprising a dissolved mannogalactan gum and as a dispersed phase swollen hydrated particles of algin salt containing cations selected from the group consisting of calcium and aluminum. The ratio by dry weight of the algin salt to the gum is from about 5:1 to about 3:1 and desired rheology is obtained by controlling the cation content selected from the group calcium and aluminum relative to the content of the algin salt so that the viscosity of the lotion at 25° C. is from about 5,000 to about 20,000 cps. when the concentration of the algin salt in the lotion is from about 0.5 percent to about 1.1 percent. The gum concentration is from about 0.14 percent to about 0.24 percent. The lotion may contain beneficiating materials such as glycerine and alcohol. It preferably contains boric acid which has a modifying effect on the gum and, in addition, an acid such as fumaric. The invention relates to the lotion and for use in making it a solid composition and a glycerine base slurry. Its production involves equilibrating cation concentration from suitable cation sources for obtaining desired rheology.

3,764,708

METHOD OF PREPARING SOY AND MISO-PASTE

Tatsuo Aonuma, Kashiwa; Atsushi Yasuda, Noda; Toshizumi Yuasa, Noda; Akira Arai, Noda; Koya Mogi, Noda, and Tamotsu Yokotsuka, Nagareyama, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Chiba-ken, Japan

Filed Aug. 11, 1971, Ser. No. 170,874
Int. Cl. A23l *1/20, 1/22*
U.S. Cl. 426—46 **24 Claims**

A method of preparing soy and miso-paste of superior flavor and taste and of high quality, which comprises treating the starting soy-beans and/or carbohydrates with a current of superheated steam at a gauge pressure of 4 to 8 kg/cm² and a temperature of 200°C. to 280°C. for a time not exceeding 15 seconds. The treated soybeans are quickly exhausted into the atmosphere at atmospheric pressure.

3,764,709

SYNTHETIC ONION OIL COMPOSITION

William G. Galetto, Cockeysville, and Carol A. Pace, Baltimore, both of Md., assignors to McCormick & Company, Inc., Cockeysville, Md.

Filed July 13, 1971, Ser. No. 162,266
Int. Cl. A23l *1/26*
U.S. Cl. 426—65 **6 Claims**

A synthetic onion oil composition consists essentially of a blend of dialkyl disulfides and dialkyl trisulfides wherein the alkyl moiety of the di- and tri-sulfides is methyl and propyl.

3,764,710

DRINK COMPOSED OF FERMENTED OR ACIDIFIED MILK AND CITRUS FRUIT JUICE

Kaoru Inagami, Tokyo; Isamu Mitsui, Yokohama, and Hiroaki Kando, Tokyo, all of Japan, assignors to Calpis Shokuhin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 17, 1971, Ser. No. 172,561
Claims priority, application Japan, Sept. 12, 1970, 45/79692
Int. Cl. A23c *9/12; A23l 1/02*
U.S. Cl. 426—185 **11 Claims**

100 parts by weight of citrus fruit juices containing from 10–25 percent by volume of pulp material are concentrated to

not less than one-third of their original weight. The concentrated juice is mixed with from 5 to 40 parts by weight, based on the weight of the original juice, of fermented or acidified milk. The resulting drink can be homogenized and can include other ingredients such as sugar, acids, flavoring and coloring agents.

3,764,711

ACYLATED PROTEIN FOR COFFEE WHITENER FORMULATIONS

Paul Melnychyn, Northridge, Calif., and Ronald B. Stapley, Bellevue, Wash., assignors to Carnation Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 672,685, Oct. 2, 1967, abandoned. This application Mar. 29, 1971, Ser. No. 129,149

Int. Cl. A23c *1/00*

U.S. Cl. 426—201 **22 Claims**

A modified, edible protein suitable for use in human foods is provided by contacting an essentially unhydrolyzed edible protein dispersed in an aqueous alkaline medium with a modifying agent capable of acylating the functional groups of the protein which are electronegative in character and have replaceable hydrogen atoms for a period of time sufficient to provide an essentially unhydrolyzed modified protein having at least about 30 acyl groups per 10^5 grams of protein. The modified protein may be used in a variety of food products and is particularly well suited for use in coffee whitener formulations.

3,764,712

COMPOSITIONS CONTAINING HEXOXYACETALDEHYDES AND THEIR DERIVATIVES

Kurt Kulka, New York, N.Y., assignor to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Continuation-in-part of Ser. No. 637,941, May 12, 1967, abandoned. This application Nov. 24, 1970, Ser. No. 92,512

Int. Cl. A23l *1/26*; C07c *47/06*; C11b *9/00*

U.S. Cl. 426—222 **20 Claims**

Compositions containing hexoxyacetaldehydes and/or their derivatives for flavoring foodstuffs or for use in perfumery.

3,764,713

METHOD FOR TREATING BEEF SUET TO PRODUCE PARTIALLY DEFATTED TISSUE HAVING A RELATIVELY LOW BACTERIA COUNT USEFUL FOR HUMAN CONSUMPTION

William J. Poplack, Birmingham; Edward W. McMullen, Huntington Woods, and Hemendra Basu, Warren, all of Mich., assignors to Unisource Foods Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 221,818, Jan. 28, 1972, abandoned. This application May 8, 1972, Ser. No. 250,924

Int. Cl. A22c *18/00*

U.S. Cl. 426—233 **5 Claims**

Beef suet is first tested by a rapid means. The beef suet is then ground and introduced into a melt tank. Thereafter the material is further disintegrated whereby a lighter phase and a heavier phase is produced. The lighter phase is a tallow which is refined. The heavier phase is a useful partially defatted tissue.

3,764,714

METHOD OF PEELING EGGS

Leslie W. Driggs, West Sand Lake, N.Y., assignor to Nutronics Machine Corporation, Hoosick Falls, N.Y.

Filed July 15, 1970, Ser. No. 54,969

Int. Cl. A23l *1/32*

U.S. Cl. 426—234 **14 Claims**

A method of peeling eggs whereby the eggs are cooked small end down, cooled rapidly and peeled by placing them in a cylindrical chamber having its central axis generally disposed at an angle to the vertical. The chamber is moved in an orbital movement without rotating the chamber about its central axis. The peeled eggs are then packaged and pasteurized. The pasteurization may be carried out with radio frequency heating at approximately 180°F.

3,764,715

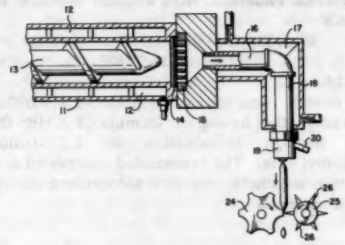
METHOD OF SIMULTANEOUSLY EXTRUDING AND COATING A READY-TO-EAT CEREAL

Larry J. Henthorn, Crystal Lake, and Frank R. Kings, Barrington, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Feb. 4, 1972, Ser. No. 223,530

Int. Cl. A23l *1/10*

U.S. Cl. 426—273 **2 Claims**



A method of producing a coated ready-to-eat cereal product is disclosed comprising producing a center filled cereal and drying the center filled cereal product until the syrupy center filling is brought through the surface of the cereal to form a dried coating thereon.

3,764,716

PREPARATION OF DEHYDRATED MASHED POTATOES

Joe H. Rainwater, and Roderick G. Beck, both of Blackfoot, Idaho, assignors to American Potato Company, Vacaville, Calif.

Continuation of Ser. No. 222,538, Sept. 10, 1962, abandoned, which is a continuation-in-part of Ser. No. 139,760, Sept. 21, 1961, abandoned. This application Nov. 16, 1970, Ser. No. 90,107

Int. Cl. A23b *7/03*

U.S. Cl. 99—207 **6 Claims**

A process for producing a dehydrated mashed potato product from an incompletely peeled and trimmed potato, including the steps of controlled mashing, slurrying and screening to remove all of the peels, eyes, rot and debris without damaging the potato cell prior to the final dehydration of the potato.

ERRATUM

For Class 426—310 see:
Patent No. 3,764,348

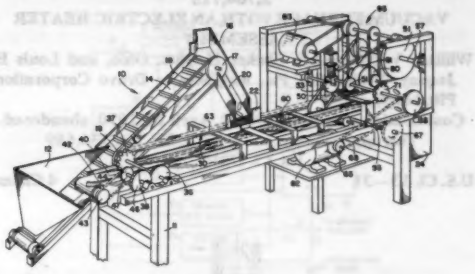
3,764,717

METHOD FOR AUTOMATICALLY ORIENTING AND TRIMMING VEGETABLES

Walter E. Rood, Stevensville, Mich., assignor to Michigan Fruit Canners, Inc., Benton Harbor, Mich.

Division of Ser. No. 840,678, July 10, 1969, Pat. No. 3,621,900. This application Aug. 3, 1971, Ser. No. 168,710
Int. Cl. A23n *15/02*
U.S. Cl. 426—481 **9 Claims**

A method for orienting and cutting vegetables places the vegetables onto a receptacle having a depression generally corresponding to the shape of the vegetables. The vegetables are vibrated on the receptacle so that they are horizontally disposed thereon. The receptacles with the vegetables are



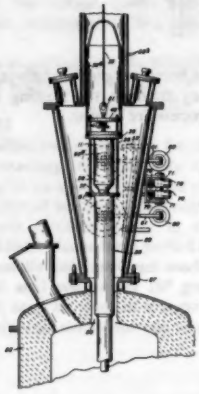
moved in a path that traverses cutting knives. The vegetables may be held as they traverse the cutting knives. Suitable vegetables for the process are onions.

ELECTRICAL

3,764,718
VACUUM FURNACE WITH AN ELECTRIC HEATER ASSEMBLY

William V. Middough, Shaker Heights, Ohio, and Louis H. Jaquay, Bridgeville, Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 29,150, April 16, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 234,689
Int. Cl. H05b 1/00
U.S. Cl. 13—31 **4 Claims**



An electric resistance heater especially intended for industrial use having at least two elongated parallel elements, one of which is located inside the other, one being an elongated tube through which the other extends, the two being electrically insulated from each other except where they are joined by a conducting closure for the outer element at one end only of the assembly. At the other end the outer element has a terminal portion through which it is electrically connected to one side of a current source. The inner element also has a terminal portion that passes through and projects beyond the terminal portion of the outer element to which connection can be made to the other side of a power source. Since both the inner and outer elements are non-magnetic conductors carrying equal currents in opposite directions, there is no external magnetic field and therefore no energy loss to surrounding metal bodies when the heater is energized with alternating current. Generally both elements are resistors. The outer element substantially protects the inner one from oxidation or other corrosive effects of the atmosphere in which the heater operates.

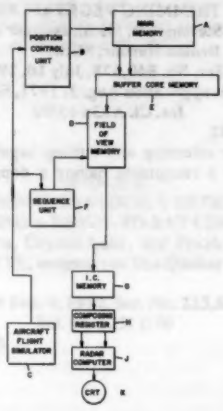
A novel mounting enables the heater to be projected into a chamber to be heated or withdrawn into a shroud, with power-operated terminal clamps through which the terminals of the resistor are connected to a power source when the heater is projected into the chamber to be operated.

3,764,719
DIGITAL RADAR SIMULATION SYSTEM

Darold R. Dell, Palo Alto, Calif., assignor to Precision Instrument Company, Palo Alto, Calif.

Filed Sept. 1, 1971, Ser. No. 176,893
Int. Cl. G09b 9/00
U.S. Cl. 35—10.4 **17 Claims**

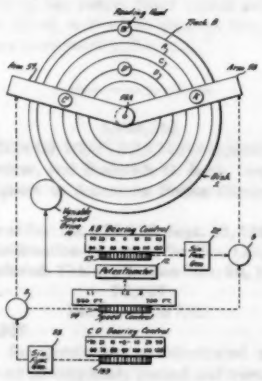
A digital radar simulation system having a main memory in which data words representative of the elevation and reflectance of discrete locations in a geographic area are stored in cartesian coordinate format. The main memory is continuously sampled to retrieve the data words of locations coming into the radar field of view of a simulated aircraft overflying the geographical area, which data words are placed in a field of view memory in cartesian coordinate format. Signals representative of the speed and heading of the simulated aircraft are used to control the selection of new data words so as to continuously update the field of view memory, so that the field of view memory will at all times contain the data words corresponding to the locations within the simulated aircraft field of view. The data words in the field of view memory are accessed out in a polar coordinate arrangement in the form of successive, discretely spaced radial scan lines and in the order of increasing range for each scan line with the origin of the polar coordinate system coinciding with the position of the simulated aircraft. The data words thus accessed from the field of view memory are suitably processed to produce a radar-like display on a cathode ray tube screen.



3,764,720
SPEED AND BEARING INTEGRATOR

Robert F. Peterson, Burbank, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 11, 1971, Ser. No. 105,505
Int. Cl. G09b 9/00
U.S. Cl. 35—10.4 **2 Claims**



In an antisubmarine warfare training device a speed and bearing integrator is provided to control the simulation of a

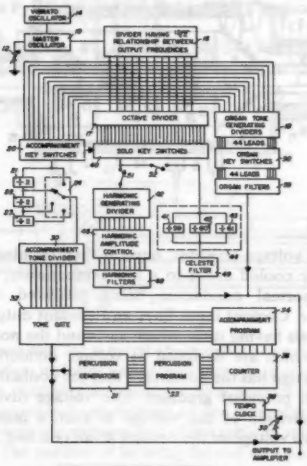
submarine "signature." Differentially interconnected speed and bearing setting means are used to selectively position two readout heads on a rotating disk having two sets of information recorded thereon. Speed and bearing controls can be adjusted independently without affecting each other.

3,764,721

ELECTRONIC MUSICAL INSTRUMENT

Fred B. Maynard, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 30, 1971, Ser. No. 185,012
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.24 **22 Claims**



An electronic musical instrument includes a tunable master oscillator and digital frequency dividers for synthesizing musical notes and their harmonics to provide a multi-voice instrument having celeste and vibrato features. Automatic accompaniment with tone and percussive sounds is provided. A tempo clock and a beat counter sequentially operate a series of gates to pass signals from the harmonic generating divider to trigger percussive sound generators. The key in which the accompaniment is played is selectable by the keyboard, and is determined by the frequency of the signal applied to a harmonic generating divider. The melody pattern played is determined by an accompaniment program which may be either internally or externally programmed.

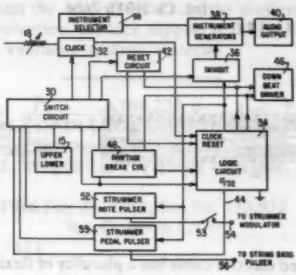
3,764,722

AUTOMATIC RHYTHM SYSTEM PROVIDING DRUM BREAK

James S. Southard, Elkhart, Ind., assignor to C. G. Conn Ltd., Elkhart, Ind.

Filed June 16, 1972, Ser. No. 263,474
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.03 **25 Claims**

A rhythm system includes a memory for storing rhythm patterns, with a plurality of sections for controlling individual rhythm instruments, and instrument generators for producing sounds in accordance with the patterns. The patterns are stored in memory lines, with the number of counts in the patterns differing from one pattern to another. A plurality of short rhythm patterns can be stored on a single memory line. The system includes pushbutton switches for selecting the particular rhythm patterns and automatically selects the proper clock frequency for timing the selected rhythm pattern. The system is automatically reset at the end of the pattern and can selectively reset at the beginning of an intermediate position in the memory line, as required when a plurality of rhythms are



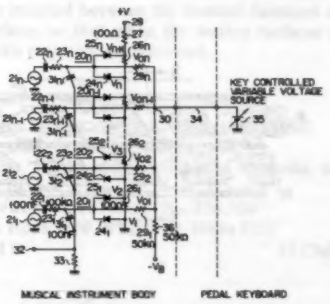
stored in sequence on a single line. The system can also provide a special rhythm, such as a drum break, and this can be inserted during the playing of a selected continuous rhythm.

3,764,723

VOLTAGE-CONTROLLED SINGLE TONE SELECTOR FOR USE IN ELECTRONIC MUSICAL INSTRUMENT

Akihisa Takeyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Mar. 16, 1972, Ser. No. 235,443
Claims priority, application Japan, Mar. 16, 1971, 46/14276; Mar. 16, 1971, 46/14277
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **14 Claims**



A single tone selector for an electronic musical instrument provided with a plurality of tone generators and the same number of keys. Tone signals from the tone generators are respectively shunted by being connected to normally conducting voltage controlled diode switchers which are selectively rendered nonconductive one at a time in response to the different predetermined magnitudes of voltage. A key controlled variable voltage source generates upon key depression such magnitude of voltage as render the corresponding one of the diode switchers nonconductive to stop shunting the tone signal. The output voltages of the variable voltage source are supplied to the diode switchers by a common conductor. The variable voltage source is designed to generate such magnitude of voltage as renders only one of the diode switchers nonconductive even when two or more keys are simultaneously depressed. A tone signal from a tone generator corresponding to the diode switcher thus rendered nonconductive can be conducted to a common output terminal.

3,764,724

ELECTRIC CABLE WITH CONTROLLED FLEXIBILITY

Dale B. Mulvany, Wayne, Mich., assignor to Watteredge-Uniflex Inc., Avon Lake, Ohio

Filed Jan. 20, 1972, Ser. No. 219,392
Int. Cl. H01b 7/34
U.S. Cl. 174—15 C 9 Claims

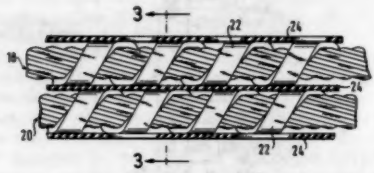
A stranded electric cable has a plurality of flexible ropes annularly disposed and helically twisted about a core consisting of a helical spring containing a flat bar which inhibits flexing of the cable in planes of desired rigidity while permitting free flexing in a desired plane. The bar is removable and replaceable from one end without disassembling the cable and spacers are provided between the bar and the spring.

3,764,725

ELECTRICAL CONDUCTOR FOR SUPERCONDUCTIVE WINDINGS OR SWITCHING PATHS

Wilhelm Kafka, Tennenlohe, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wisseschaften e.V., Gottingen, Germany

Filed Feb. 1, 1972, Ser. No. 222,525
Claims priority, application Germany, Feb. 1, 1971, P 21 04 600.4
Int. Cl. H01v 11/00
U.S. Cl. 174—15 C 3 Claims



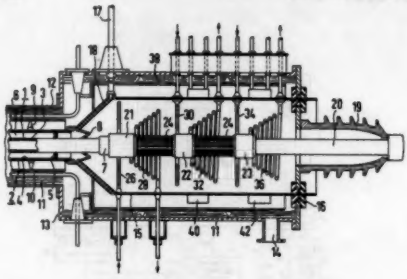
An electrical conductor formed with a plurality of electrically insulated and transposed superconductor filaments braided together along the axial length thereof. Each filament is a thin flexible glass capillary filled with superconductive material. These capillaries are formed by heating and drawing a glass tube containing the superconductive material which has a melting temperature below that of the softening temperature of the glass. During the braiding process, filaments, of other materials, can be worked in with the capillaries and a hardenable material, such as casting resin, can be applied to the intermixed filaments and capillaries. The other filaments can be removed from the mass by a suitable process to provide a number of interconnected cavities in close proximity to the capillaries for passage of a cooling medium. The electrical or multiple-core conductor can also be positioned within a sheath in such a manner that passageways for cooling medium extend alongside the outer surface of the electrical conductor. The electrical conductors can be wound to produce windings or switching paths in which passageways for a cooling medium are provided.

3,764,726

TERMINAL FOR ELECTRICAL APPARATUS WITH CONDUCTORS COOLED DOWN TO A LOW TEMPERATURE

Hubert Kohler, Eltersdorf, and Fritz Schmidt, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 2, 1972, Ser. No. 303,060
Claims priority, application Germany, Nov. 17, 1971, P 21 57 125.5
Int. Cl. H01v 11/00
U.S. Cl. 174—15 BH 17 Claims



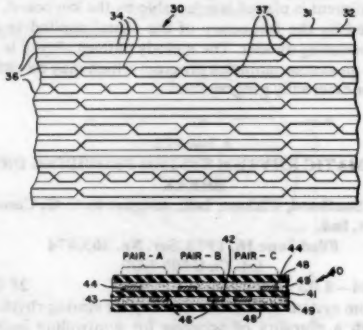
A high voltage-resistant, current feed terminal to a superconductor cooled down to a low temperature, with its connected normal conductor being provided with a heat exchanger. Coolant input lines and coolant output lines each form spirals having turns which surround the normal conductor and which are designed as voltage dividers. The spiral-shaped design has the advantage that the coolant line can take up a high potential gradient. The voltage divider causes a uniform division of the voltage in such a manner that the breakdown voltage of the coolant is not reached.

3,764,727

ELECTRICALLY CONDUCTIVE FLAT CABLE STRUCTURES

John William Balde, Flemington, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 12, 1972, Ser. No. 261,862
Int. Cl. H01b 7/08, 11/02
U.S. Cl. 174—34 36 Claims



A flat cable structure includes a number of pairs of longitudinally extending conductors in a substantially flat array. The conductors of each pair are spaced laterally from one another except at periodic locations where the conductors of the pair exchange lateral positions by crossing over one another. The crossing periodicities differ in adjacent pairs of conductors in the array.

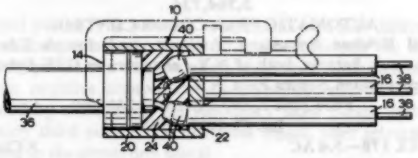
Several arrays may be stacked one upon another. Each successive array in the stack may have a laterally varying pattern of crossing periodicities reversed from that of the preceding array. The arrays are patterned so as to avoid the alignment of pairs of conductors with like crossing periodicity in adjacent arrays when the arrays are properly aligned in a stack and, in certain instances, even where there is one track or more than one track misalignment between adjacent arrays in a stack. The overall pattern of crossing periodicities along the length of each array is repetitive, facilitating cable termination.

3,764,728

END SEALS FOR ELECTRIC CABLES AND METHOD OF MAKING SAME

David Malcolm Howie, Carrying Place, Ontario, and Roy Victor William McKenzie, Belleville, Ontario, both of Canada, assignors to Pyrotenax of Canada Limited, Trenton, Ontario, Canada

Filed Apr. 17, 1972, Ser. No. 244,752
Claims priority, application Canada, Feb. 25, 1972, 135,604
Int. Cl. H02g *15/04, 1/14*
U.S. Cl. 174—76 **2 Claims**



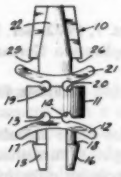
An improved seal for a metal sheet cable according to the present invention includes a clamping ring which may be positioned in the clamping engagement with respect to the pot member in response to movement of the clamping ring in a direction towards the exposed end of the cable to which it is to be clamped. The method of forming the end seal according to the present invention includes the steps of locating the clamping ring in a position spaced inwardly from the exposed end of the cable to which it is to be clamped, positioning the primary input passage of the pot member on the end of the cable and moving the clamping ring in a direction towards the exposed end of the cable so as to be positioned in the annular passage formed between the pot member and the cable in clamping engagement with the pot member and the cable.

3,764,729

RELEASABLE LOCK SUPPORT FOR PRINTED CIRCUIT MODULE

Edward C. Kowalewski, Palatine, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Nov. 29, 1971, Ser. No. 202,946
Int. Cl. F16b *19/00;* **A44b** *21/00*
U.S. Cl. 174—138 D **2 Claims**



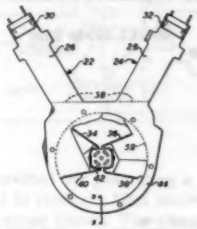
A releasable lock support is provided for releasably locking together two components such as a printed circuit board and a chassis. The lock support has a pair of dished flexible flange members which are urged into engagement with the two members to be releasably locked together, and act as spring washers against their respective members. The lock support extends through aligned apertures formed in the members to be joined, and includes a pair of flexible leg members which cooperate with one of the dished flange members to engage the chassis firmly, while the other dished flange member cooperates with a gripping means to firmly seat the flange member against the other member. In the preferred embodiment of the invention, the lock support is a one piece element molded from a suitable insulator material.

3,764,730

ELECTRICAL CONDUCTOR FEED THROUGH AND SEAL

Martin Malone, Hawthorne, and Robert J. Dickie, Maywood, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed July 21, 1972, Ser. No. 273,935
Int. Cl. H01b *17/30*
U.S. Cl. 174—151 **6 Claims**



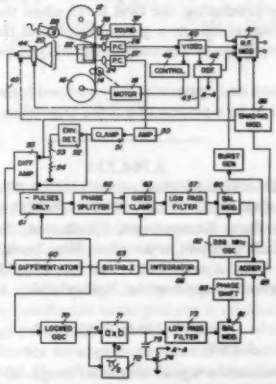
An electrical conductor feed through and seal is provided which allows for the passing of electrical conductors, imbedded in flextape, from outside an enclosure to within an enclosure without the use of headers. Flextapes are used which are configured, in part, to match the profile of the mating surfaces of the enclosure. The tapes are bonded together at this point by a suitable adhesive. An elastomeric material of suitable durometer is inserted between the bonded flextapes and each mating surface, so that when the mating surfaces are drawn together, the required seal is formed.

3,764,731

COLOR SIGNAL RECORDING AND DECODING APPARATUS

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 14, 1972, Ser. No. 226,100
Int. Cl. H03k *9/10;* **H04j** *9/00;* **H04n** *9/32*
U.S. Cl. 178—5.2 D **12 Claims**



Apparatus for converting two independent functions of color saturation and hue into pulses varying in width and

frequency each in accordance with one of said functions. Apparatus for scanning a record medium having two level information recorded thereon, said scanning apparatus producing a train of pulses in accordance with the information, which pulses vary independently in width and frequency, each variation representing an independent function of hue and saturation. Circuitry connected to said apparatus for processing the pulses to separate the width variations from the frequency variations and produce two electrical signals representative of the two functions of hue and saturation.

3,764,732

METHOD AND APPARATUS FOR REPLACING A PART OF A FIRST TELEVISION IMAGE BY A PART OF A SECOND TELEVISION IMAGE

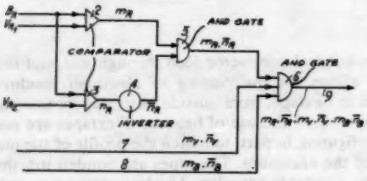
Guy R. Macheboeuf, Vitry-sur-Seine, France, assignor to Office De Radiodiffusion-Television Francaise, Paris, France

Filed June 21, 1972, Ser. No. 264,847

Claims priority, application France, June 25, 1971, 7123302

Int. Cl. H04n 9/00

U.S. Cl. 178—5.4 P **5 Claims**



A method for replacing a part of a first television image by a part of a second television image is disclosed in which first or second image signals representing the respective first and second images are selecting according to a binary control signal of which a first level selects signals of the first image and a second level selects signals of the second image. A corresponding apparatus is also disclosed in which circuitry is provided for producing the first level when the amplitude of the second signal lies in a given range and the second level when the amplitude of the second signals lies outside the given range.

Said method and apparatus may be used for replacing a part of a decoration by a person in a color television system.

3,764,733

CHROMINANCE SIGNAL AMPLIFIER STAGE FOR A COLOUR TELEVISION RECEIVER

Wouter Smeulers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

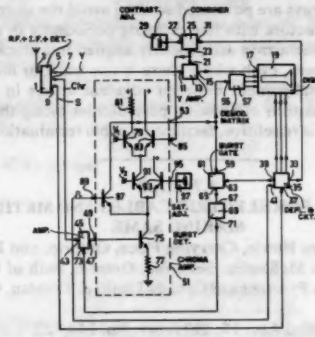
Filed Apr. 8, 1971, Ser. No. 132,335

Claims priority, application Netherlands, Apr. 28, 1970, 7006143

Int. Cl. H04n 9/46, 9/48

U.S. Cl. 178—5.4 SY **4 Claims**

In a chrominance signal amplifier stage of the long-tailed pair type including a current branch circuit and a load resistor in one of the current branches from which a burst signal is obtained, the amplitude of this burst signal is rendered independent of an adjusting or control voltage active on a branch current by including a parallel current branch and blocking current branches not connected to the load resistor.



3,764,734

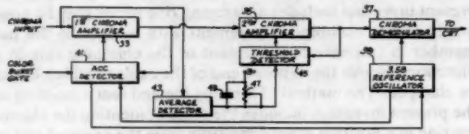
AUTOMATIC PEAK COLOR CONTROL

Gopal Krishna Srivastava, Amherst, and Joseph Edward Thomas, Batavia, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 7, 1972, Ser. No. 260,660

Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 AC **8 Claims**



The color level of a chroma signal in a color television receiver is automatically maintained by applying a chroma signal to a variable gain amplifier and utilizing a detector for applying the output signal back to the variable gain amplifier to vary the gain inversely with the peak level of the applied chroma signal and provide a substantially constant level of peak chroma signal independent of the percentage of chroma in the signal.

3,764,735

METHOD AND ARRANGEMENT FOR FURNISHING A CORRECTING OF ERRORS IN THE REGISTRATION OF RASTERS IN COLOR TELEVISION CAMERAS

Hans Dieter-Schneider, Gross-Gerau; Georg Treusch, Unter-Ostern, and Christian Sacher, Eberstadt, all of Germany, assignors to Robert Basch Fernsehanlagen GmbH, Darmstodt, Germany

Filed Sept. 7, 1972, Ser. No. 286,707

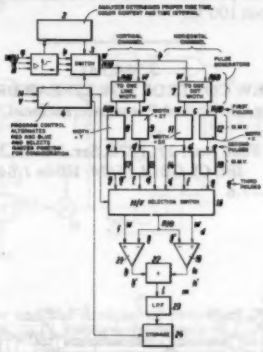
Claims priority, application Germany, Sept. 7, 1971, P 21 44 744.9

Int. Cl. H04n 9/08

U.S. Cl. 178—5.4 M **12 Claims**

Red, green and blue color signals are doubly limited and amplified. A switching stage furnishes these signals to horizontal and vertical channels for effecting horizontal and vertical raster registration correction. The correction relative to the white (green) raster is made by furnishing first pulses in response to discontinuities in the color signals, triggering first and second monostable circuit means with the first pulses, the monostable circuit triggered by the white signal furnishing broad second pulses having a pulse width twice the pulse

width of the narrow second pulses furnished by the second monostable circuit means. Third and fourth monostable circuit means then furnish primary and secondary third pulses in response to the trailing edge of the broad and narrow



second pulses. The positive components of a first difference signal formed by taking the difference between the broad second pulses and the secondary third pulses are then added to the negative components of a second difference signal formed by subtracting the secondary third pulses from the primary third pulses. The resultant signal, after integration, is used as the correction signal.

3,764,736

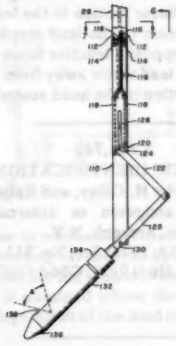
REMOTE VISUAL EXAMINATION APPARATUS

Richard P. Kosky, East Granby, Conn., and Preston W. Averill, Springfield, Mass., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 3, 1971, Ser. No. 120,569

Int. Cl. H04n *5/26*

U.S. Cl. 178—7.81 **10 Claims**



A remote visual examination apparatus for viewing reactor internals having a TV camera with a self-contained lighting system and remote focus is extended from a mast which is remotely positionable through particularly placed openings in the reactor core support barrel flange. A pivotal mast vernier elevation and rotation unit rides on the core support barrel flange and serves to control the ultimate elevational and rotational positioning of the mast to orient the TV camera with respect to the particular internal to be viewed. The camera is fixed to the end of the mast by means of a pneumatically actuated tilt assembly which may be remotely controlled to tilt the camera so as to extend the range of view thereof.

3,764,737

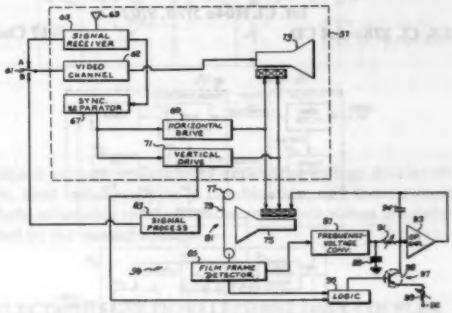
SINGLE RAMP FILM AND TV RECEIVER APPARATUS

Martin Fischman, Wantagh, and William D. Murphy, Seneca Falls, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,361

Int. Cl. H04n *5/36*

U.S. Cl. 178—7.2 **9 Claims**



Apparatus is provided for generating a single ramp signal which is employed to vertically alter electron beam scanning of a flying spot scanner system. The ramp signal has a slope proportional to the rate of film frame movement through a film scanning zone and sequences at a time substantially coincident with a retrace period of a vertical scan signal of a visual display device.

3,764,738

METHOD AND ARRANGEMENT FOR LIMITING THE OUTPUT SIGNAL AMPLITUDE OF A VIDEO AMPLIFIER DURING FLY-BACK HIGHLIGHT DISCHARGE

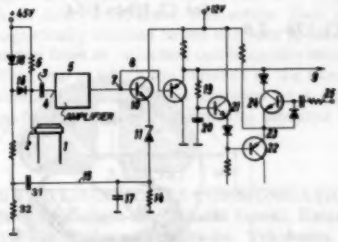
Herbert Zettl, Erfinder, and Emil Siegel, Erfelden, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed Feb. 15, 1973, Ser. No. 226,442

Claims priority, application Germany, Feb. 19, 1971, P 21 07 554.7

Int. Cl. H04n *5/38*

U.S. Cl. 178—7.2 R **14 Claims**



A method and apparatus for amplifying television picture signals. The amplified television picture signals from an amplifier are monitored by a circuit arrangement including a Zener diode. When the amplitude level of the amplified signals exceeds a predetermined value, the Zener diode becomes conductive and an auxiliary signal is generated. A normally high resistance semi-conductor arrangement is connected in parallel with the high resistance in the input circuit of the amplifier. The semi-conductor arrangement is normally non-conductive, and in such cases, the effective load impedance at the input of the amplifier is substantially equal to the high resistance. When the auxiliary signals are applied to the semi-conductor arrangement, the latter becomes conductive to thereby pro-

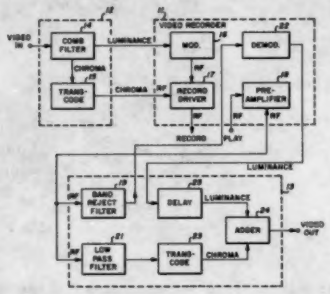
vide a substantially lower resistance in the input circuit of the amplifier. In the latter case, the voltage levels developed at the input of the amplifier are limited, to thereby limit the amplitude of the amplified signals at the output of the amplifier.

3,764,739

COLOR VIDEO RECORDING AND PLAY BACK SYSTEM

Yves C. Faroudja, 1157 Regia Ct., Santa Clara County, Calif.

Filed Jan. 25, 1971, Ser. No. 109,535
Int. Cl. H04n 5/78, 9/02
U.S. Cl. 178—5.4 CD 17 Claims



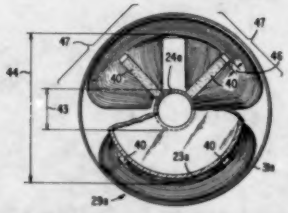
A color video recording system wherein the incoming video signal is separated into chroma and luminance signals by a comb filter and the chroma signal thereafter recorded on the lower end of the RF spectrum of the record medium and the luminance recorded on the upper end of said RF spectrum is disclosed. Systems for meeting NTSC and PAL standards and utilizing quadrature modulation and line sequential modulation, either AM or FM, for transcoding the chroma signal are described.

3,764,740

CATHODE-RAY-TUBE-YOKE COMBINATION WITH AT LEAST TWO SPACED BODIES OF ORANGIC THERMOPLASTIC MATERIAL THEREBETWEEN AND A METHOD OF MAKING SAID COMBINATION

Samuel Broughton Deal, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,272
Int. Cl. H04n 5/64
U.S. Cl. 178—7.8 9 Claims



Combination comprises a cathode-ray tube, a magnetic deflection yoke in operative releationship with the tube and at least two spaced bodies of organic thermoplastic material positioned between the yoke and the tube, the bodies filling less than 20 percent of the total volume in the space between the tube and the yoke.

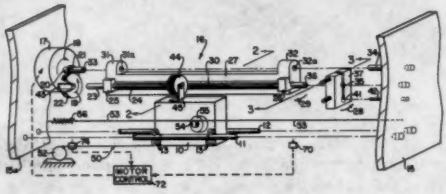
Method comprises placing a yoke in a predetermined spaced position with respect to a tube to provide a desired operative relationship therebetween. At least two substantially closed volumes are then defined between the yoke and the tube, the volumes enclosing less than 20 percent of the total volume in the spaced between the tube and the yoke. The defined volumes are substantially filled with heated liquid thermoplastic material, while the yoke and the tube are maintained at a temperature below about 50°C. The thermoplastic material is then permitted to cool and harden to a solid, which occurs at about 100°C.

3,764,741

LEAD SCREW CONTROL FOR LINEAR DRIVE SYSTEM

John H. Long, c/o United Press International, Inc., Maywood, N.J.

Filed Nov. 27, 1970, Ser. No. 93,362
Int. Cl. G01d 15/24; H04n 1/06
U.S. Cl. 178—7.6 12 Claims



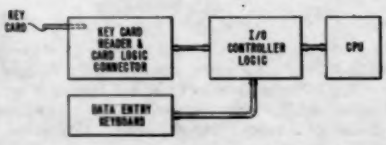
A lead control of a linear drive system particularly adapted to a drum type facsimile scanner is provided. The scanner head assembly is mounted for free movement on rails extending parallel to the axis of the drum. A half nut is affixed to the head assembly and engages a lead screw which is driven to linearly advance the head assembly. The lead screw is pivotally connected to the machine frame for rotation about an offset axis parallel to the axis of the lead screw. A friction clutch is provided between the lead screw and the machine frame and the reaction force produced by this clutch when the lead screw is rotated in a first direction causes the lead screw to pivot to bring the lead screw into meshing engagement with the half nut to effect a linear motion to the lead assembly relative to the drum. Rotation of the lead screw in the opposite direction produces an opposite reactive force through the friction clutch to pivot the lead screw away from the half nut, and terminate the linear motion of the head assembly.

3,764,742

CRYPTOGRAPHIC IDENTIFICATION SYSTEM

George F. Abbott; Charles H. Gilley, and Ralph O. Skatrud, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,616
Int. Cl. H04l 9/00; G06d 5/00
U.S. Cl. 178—22 10 Claims



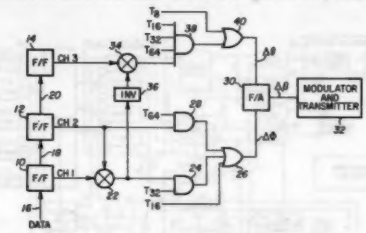
A cryptographic credit card device having a non-linear character generator based on a personalized read only storage and dynamic logic elements for manipulating data is disclosed.

3,764,743

DATA MODEM APPARATUS

William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 8, 1971, Ser. No. 187,675
Int. Cl. H04l 27/20
U.S. Cl. 178—67 2 Claims



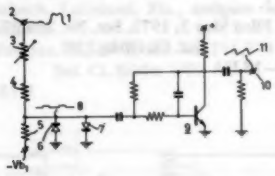
Apparatus for and the method of providing three channel, eight phase data modulation and demodulation whereby the system may be used for either two or three channels with no detrimental effects in either mode of operation due to the additional circuitry. The invention discloses additional apparatus for connection to a conventional two channel, four phase system to produce a three channel, eight phase system. The coding of the eight phase system modifies the basic phase change of a two channel, four phase system by ±22.5° depending upon the inclusive OR result of the first two channels as compared to the binary logic level of the third channel.

3,764,744

LINE TIME BASE IN TELEVISION RECEIVER

Johannes Simon Albert Van Hattum, and Jan Abraham Cornelis Korver, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1972, Ser. No. 229,081
Claims priority, application Netherlands, Mar. 16, 1971, 7103466
Int. Cl. H04n 5/04
U.S. Cl. 178—69.5 TV 5 Claims



A line time base in a television receiver including a symmetrical limiter for cutting off the line flyback pulses from which the reference signal for the synchronizing circuit is derived. As a result a space is obtained whose duration and amplitude is constant and independent of the load on the EHT generator.

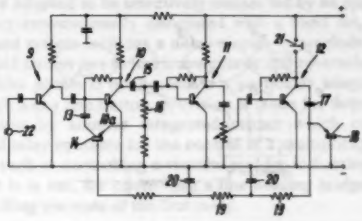
3,764,745

MULTIPLE STAGE HEARING AID TRANSISTOR AMPLIFIER HAVING SIGNAL VOLTAGE CONTROLLED FREQUENCY DEPENDENT NETWORK

Lutz Bottcher, and Karl-August Heyne, both of Berlin, Germany, assignors to Robert Bosch Elektronik GmbH, Berlin, Germany

Filed Mar. 5, 1971, Ser. No. 121,274
Claims priority, application Germany, Mar. 20, 1970, P 20 13 365.7
Int. Cl. H04r 3/04
U.S. Cl. 179—1 F 11 Claims

An amplifier with automatic amplification control in which a portion of the audio frequency voltage is tapped from the input or the output of the amplifier and is converted to a d.c. control voltage. At least one network in the amplifier is effective to influence the frequency response of the amplifier in the voice frequency range. Such network can comprise negative feedback circuits or frequency-dependent voltage divider circuits, used individually or in combination, and these circuits include adjustable resistors whose resistance values are determined by the control voltage.

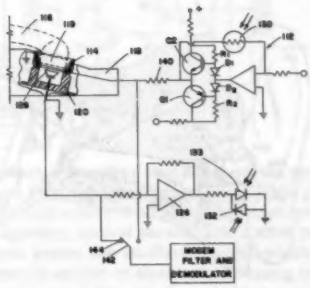


3,764,746

ELECTROMAGNETIC TELEPHONE DATE COUPLER

Ross C. Libby, West Jefferson, Ohio, assignor to Design Elements, Inc., Columbus, Ohio

Filed Nov. 8, 1971, Ser. No. 196,311
Int. Cl. H04m 1/00
U.S. Cl. 179—2 C 7 Claims



A data coupler for coupling a data terminal to a telephone network without direct conductive connection. Data signals are electromagnetically coupled to the earpiece speaker of a telephone handset from an induction coil integrally molded in a sound muffling cup in which the earpiece of the handset is engaged. Automatic gain control is provided by a negative feedback loop having a microphone pickup mounted in the cup.

3,764,747

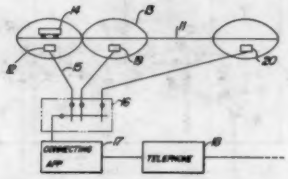
BILLING SYSTEM IN MOBILE COMMUNICATION

Hisao Nakajima, Musashino-shi; Takashi Suzuki, Kamakura-shi, and Takuya Hokawa, Totsuka-ku, Yokohama, all of Japan, assignors to Hitachi, Ltd. and Japanese National Railways, both of Tokyo, Japan

Filed Apr. 13, 1971, Ser. No. 133,532
Claims priority, application Japan, Apr. 17, 1970, 45/32333
Int. Cl. H04m 15/18
U.S. Cl. 179—7 R 3 Claims

In a mobile communication system wherein connection is provided between a vehicle and an ordinary telephone network through one of the radio base stations which are installed within a district in which the vehicle passes the radio base station being connected to an exchange station associated with the telephone network, a billing system in mobile communication, wherein an out-band signal is sent from the vehicle to an exchange equipment in the exchange station whereupon a

second out-band signal is sent from the exchange equipment to the vehicle so that, only while the second out-band signal is being received, measurement of time and billing are carried out in the vehicle, and wherein a billing classification is discriminated on the basis of a dial signal sent from the vehicle and the result of the discrimination is sent from the exchange equipment to the vehicle in the form of a voice-band multifrequency signal, also serving as a response signal, so that the condition for the billing is set in the vehicle.

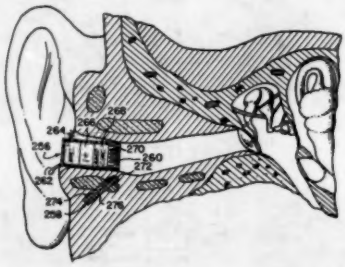


3,764,748

IMPLANTED HEARING AIDS

Jack P. Branch, P.O. Box 17435, Memphis, Tenn., and Noel O. Durham, Charlotte, N.C.

Filed May 19, 1972, Ser. No. 254,930
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 E **26 Claims**



Several hearing aid configurations for implantation within the middle ear cavity are disclosed. Each hearing aid is minute in size and is joined in operative relationship interiorly of the ear drum to the ossicle bone chain situated within the middle ear cavity. Each hearing aid is characterized by: (1) picking up or "reading" auditory signals off the ear drum, (2) subsequently amplifying and/or transmitting such signals directly to appropriate sound receiving mechanisms, natural or solid-state or both, located on the oval window, the round window, or the promontory leading into the inner ear, and (3) relying upon the automatic gain control (AGC) function performed by the tensors and flexors of the ossicle bone chain to prevent loud sounds from damaging the ear drum.

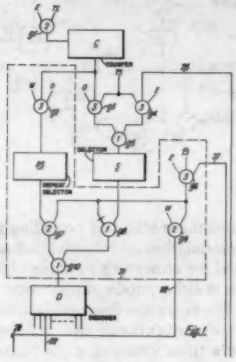
3,764,749

TELECOMMUNICATION EXCHANGE USING CORDS AND SUPERHIGHWAYS

Jeffrey Malcolm Wheat, Sherwood, Nottingham, England, assignor to Plessey Handel Und Investments AG, Zug, Switzerland

Filed May 3, 1972, Ser. No. 249,904
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 A **1 Claim**

In a telecommunication exchange having a receive and a transmit time-shared superhighway operated respectively on the odd and even time slots of a common time cycle, a call requires an odd time slot, an even time slot, a store and a pairing memory. A cord has stores which are read cyclically during the odd time slots, and in a variable sequence during the even time slots depending on store identities read from pairing memories during odd time slots. The store allocated to a call corresponds to the odd time slot in use, and the identity of the allocated store is written into the pairing memory of the odd time slot preceding the even time slot allocated to the call.



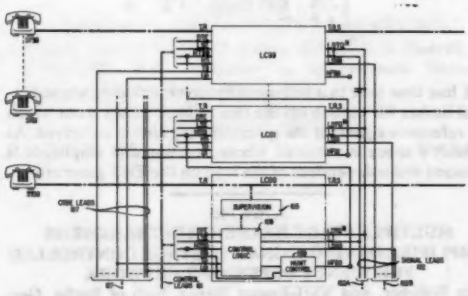
Erasure of the pairing memory at the end of a call is simplified, according to the invention, by a repeat selector RS which, during an even time slot E and in response to a clear down signal 27 at gate g6, causes a decoder D to reselect the allocated pairing memory in readiness for a write zero signal developed on the opening of gate *g*9.

3,764,750

SWITCHING SYSTEM EQUIPPED FOR ONE-WAY LINE HUNTING

John Joseph Horenkamp, Freehold, N.J.; Henry August Meise, Jr., and George William Taylor, both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 3, 1972, Ser. No. 250,072
Int. Cl. H04q *3/62*
U.S. Cl. 179—18 HA **15 Claims**



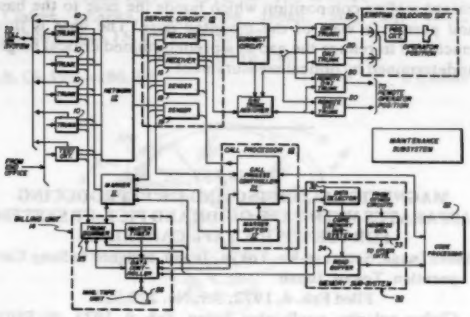
A wired logic scanner controlled switching system is disclosed equipped for one-way hunting of lines subdivided into hunting groups. When a call is directed to a busy line, another line in the same group is selected under the joint control of a priming potential received from the called line and scanning signals generated by hunting circuitry.

3,764,751

METHOD AND APPARATUS FOR SYNCHRONIZING THE OPERATION OF TRUNK SCANNERS

Richard A. Padgett, Lombard, Ill., assignor to GTE Automatic Laboratories Incorporated, Northlake, Ill.

Filed Sept. 5, 1972, Ser. No. 285,976
Int. Cl. H04q 3/18
U.S. Cl. 179—18 FG 5 Claims



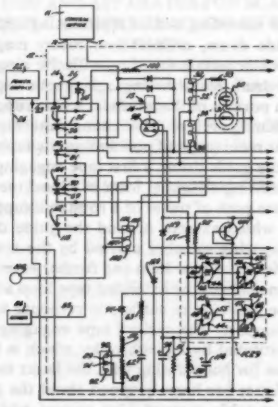
In a system having a pair of trunk scanners which are operated in synchronism to provide redundancy in case of failures, with one trunk scanner being "on line" and the other being "on standby," means are disclosed by bringing a trunk scanner into synchronism with the trunk scanner which is "on line," when the other is returned to "standby" operation. Generally, this is accomplished by the contents of a last address word read from memory and used to trigger an address generator to advance to a start address or first programmed word. This last address word is simultaneously coupled to and used to trigger the address generator associated with the other trunk scanner to likewise cause it to advance to the start address word, thus causing the address generators associated with each of the trunk scanners to simultaneously advance and to place the trunk scanners into synchronism.

3,764,752

TELEPHONE LINE CARD SYSTEM

Jerry J. Yachabach, Lakeland, Fla., assignor to Teltronics, Inc., Lakeland, Fla.

Filed Jan. 11, 1972, Ser. No. 216,978
Int. Cl. H04m 1/00
U.S. Cl. 179—81 R 9 Claims



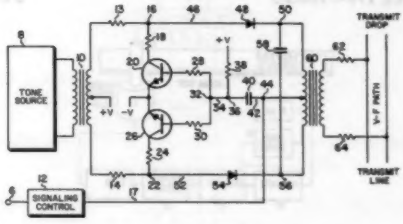
A telephone line card circuit including electrical devices and circuitry for minimizing the electrical components by providing an optical detector for controlling the input to an integrated circuit which in turn controls a multiple function relay operable as a line holding device and a visual and audible signal control device. This circuitry is particularly adapted for use in a key telephone system wherein a plurality of telephone sets are adapted to be selectively connected by an appropriate line key conventionally associated with a hand set, and this line card system includes a delay circuit to preclude dropout of a hold circuit due to line transients or line reversals. When a particular phone is connected to a particular telephone line through a key line button, provision is made for detecting this condition by another integrated circuit which controls a second relay operable for the control of a multiplicity of functions, such as controlling a visual signal for indicating that the circuit is in use, for controlling a line holding bridge, and for controlling the state of the first relay.

3,764,753

TONE KEYING CIRCUIT FOR TELEPHONE INBAND SIGNALING SYSTEM

Otto G. Wisotzky, San Francisco, Calif., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Jan. 31, 1972, Ser. No. 222,187
Int. Cl. H04m 1/00
U.S. Cl. 179—84 VF 18 Claims



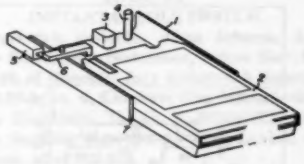
A keying circuit is described that enhances the output level of an oscillatory tone signal source and controls the gating of a tone burst from said source to a telephone transmission line in response to signaling control means. The circuit provides a shunting circuit across the oscillator output which includes switching means to enable or disable the shunting circuit and timing means connected between the switching means and the signaling control means. The timing means disables the switching means for a predetermined time interval that is greater than the dial pulse interval.

3,764,754

CIRCUIT BILATERALLY EMPLOYABLE IN CARTRIDGE TYPE TAPE RECORDER FOR TWO CHANNEL AND FOUR CHANNEL OPERATIONS

Yoshiro Mizumoto, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Apr. 11, 1972, Ser. No. 243,006
Int. Cl. G11b 21/10, 23/04, 23/18
U.S. Cl. 179—100.2 CA 5 Claims



Two to four channel switching circuitry for a cartridge tape player using a magnetic tape head having four pick-up areas

and which is movable to two positions with respect to the tape tracks on the tape in a cartridge received in the player includes four amplifier circuits, each associated with a pick-up area on the tape head and each of which is coupled to a speaker. A switch is operated in accordance with the receipt of a two or four channel cartridge in the player to connect two of the speakers to a first amplifier circuit and the other two speakers to a second amplifier circuit when in the two channel mode or each of the amplifier circuits to a corresponding one of the speakers when in the four channel mode. In the two channel mode, operation of the amplifier circuits is controlled by a rotary switch rotatable with a cam member included in a tape head indexing assembly. A first or second pair of amplifier circuits is activated in the two channel mode in accordance with the position of the rotary switch wiper.

3,764,755

AUTOMATIC TRACKING SYSTEM FOR MAGNETIC VIDEO RECORDING AND REPRODUCING DEVICES

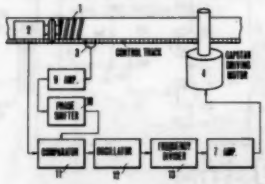
Yasushi Yamashita; Kenji Kimura, and Masao Ishikura, all of Tokyo, Japan, assignors to Shiba Electric Co., Ltd., Tokyo, Japan

Filed Sept. 15, 1971, Ser. No. 180,663

Claims priority, application Japan, Sept. 18, 1970, 45/81210

Int. Cl. G11b *15/52*

U.S. Cl. 179—100.2 S **3 Claims**



The automatic tracking system comprises a circuit including a synchronous three value delta modulator for detecting the maximum value of the signal reproduced from the magnetic tape of the magnetic video recording and reproducing device, a reversible counter for adding or subtracting the signal detected by the circuit, memory means for storing the maximum value of the count of the reversible counter, a digital-analogue converter for converting the stored digital quantity into an analogue quantity, and means responsive to the analogue quantity to adjust the phase of a signal for a capstan driving motor for adjusting the automatic tracking control.

3,764,756

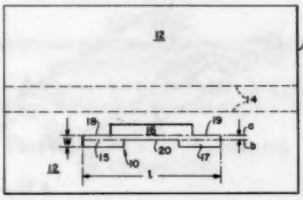
MAGNETIC HEAD ASSEMBLY WITH IRREGULARLY SHAPED APERTURE STRUCTURE

Joseph John Murray, Nesconset, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,910

Int. Cl. G11b *5/22, 5/42*

U.S. Cl. 179—100.2 C **13 Claims**



In the manufacture of magnetic head assemblies, an irregularly shaped elongated aperture is formed in a nonmagnetic base to receive a magnetic core having a transducing gap. The aperture has a plurality of sidewalls which lie in two parallel planes spaced from each other by the width of the core, at least one portion of the aperture has a width, in a direction normal to the parallel planes, which is greater than the thickness of the core. The core is inserted between the sidewalls in the slot defined thereby, so that its gap is located in a portion of the aperture wider than the core. The remaining vacant portions of the aperture are filled with a transparent sealing composition which bonds the core to the base and permits a view of the mounted core. The base is then machined to reduce the gap to a predetermined critical height as determined by optical measurement.

3,764,757

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS WITH TAPE GUIDE AND PICK-UP SYSTEM FOR USE WITH A TAPE CARTRIDGE

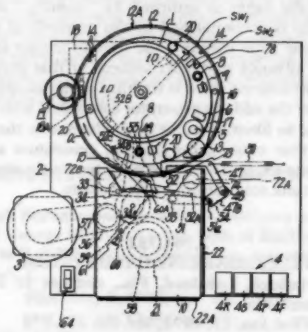
Katsu Inaga, Setagaya-ku, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 4, 1972, Ser. No. 223,552

Claims priority, application Japan, Feb. 9, 1971, 46/5505; Apr. 23, 1971, 46/32510

Int. Cl. G11b *23/04, 15/66*

U.S. Cl. 179—100.2 ZA **16 Claims**



In a magnetic recording and/or reproducing apparatus having a tape guide drum, at least one rotary magnetic head moved in a circular path coinciding with the circumferential surface of the drum for scanning a magnetic tape wrapped about at least a portion of that surface, a tape supply, such as, a cassette containing reels on which a magnetic tape is wound, and a holder for receiving and positioning the tape supply at a distance from the guide drum; a first tape engaging member is provided for drawing an initial loop of tape from the supply across an arcuate path of travel of a rotatable support, for example, a ring, which extends around the guide drum, and a second tape engaging member carried by the rotatable support engages the initial tape loop and further extends the loop for wrapping one side of the extended tape loop about at least a portion of the guide drum surface in response to turning of the rotatable support. The second tape engaging member is preferably constituted by a pinch roller which is brought adjacent a capstan for cooperating with the latter in driving the tape after the latter has been wrapped about the guide drum. Further, the rotatable support also carries additional tape guide members which engage the other or return side of the extended loop for holding such return side away from the guide drum surface.

3,764,758

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS WITH TRANSDUCER EXTENDING THROUGH A RECORD SUPPORT PLATE HAVING AN ANNULAR GROOVE COEXTENSIVE WITH RECORD TRACK

Yoichi Odagiri, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 23, 1972, Ser. No. 256,151

Claims priority, application Japan, May 26, 1971, 46/43209; June 15, 1971, 46/50957

Int. Cl. G11b 5/60

U.S. Cl. 179—100.2 P 6 Claims

An apparatus for magnetically recording and repeatedly reproducing electrical signals, for example, for use in the slow-motion or still playback of video signals, includes a pliant record disk mounted, at its center, on a rotatable shaft and having a magnetizable surface that is engaged by an electromagnetic transducer or head extending through a support plate for recording or reproducing signals in at least one annular area or record track. When the shaft is at rest, the pliant disk can lie limply against, and be supported by the support plate. In order to avoid the pickup of dust at each annular record track area of the record disk, the surface of the support plate confronting the record disk is formed with an annular groove or recess which is at least coextensive with each record track area on the record disk so that the latter cannot contact the support plate and pick up dust therefrom in each record track area. Further, when the apparatus is enclosed in a cabinet, air deflectors depend therefrom to near the record disk to create turbulence in any centrifugally induced airflow that might otherwise cause the record disk to deflect away from the support plate, particularly near the periphery of the record disk.

3,764,759

METHOD AND APPARATUS FOR SCANNING RECORDING CARRIERS BY MEANS OF RADIATION BEAMS

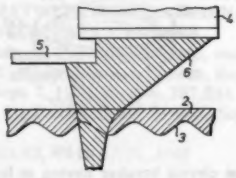
Felix Herriger, Ulm/Donau, and Gerhard Dickopp, Berlin, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed Nov. 16, 1970, Ser. No. 89,692

Claims priority, application Germany, Nov. 15, 1969, P 19 58 858.0

Int. Cl. G11b 11/00; H04n 5/76

U.S. Cl. 179—100.4 M 9 Claims



For playing back signals, such as video signals, which are stored on a transparent disc-shaped carrier having deformations on its surface that correspond to the pattern of the signal amplitudes and that are produced by means of a pressing process similar to that employed for a phonograph record, the deformations are scanned by means of a light beam which strikes the deformations as the carrier moves relative to a light source, and the beam is deflected, according to the deformations, as it travels through the carrier to a photoreceiver and associated half plane aperture. The light used for scanning is formed in a very narrow beam of radiation which is narrower than the wavelength of the highest recorded frequency and this is achieved through the use of a slit aperture in the path of the light beam.

3,764,760

METHOD OF AND MEANS FOR EMITTING INTERROGATION CODES TO SUPERVISE REPEATERS OF PCM TELECOMMUNICATION SYSTEM

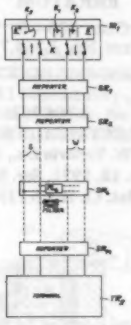
Dino Marchini, Trezzano sul Naviglio, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Dec. 27, 1971, Ser. No. 212,283

Claims priority, application Italy, Dec. 24, 1970, 33529 A/70

Int. Cl. H04b 3/46

U.S. Cl. 179—175.31 R 14 Claims



To test the performance of several repeaters cascaded along a PCM telecommunication channel, a pulse generator at a terminal station is settable to emit bipolar pulse trains in which a balanced pulse pattern, recurring m times in succession, alternates with an unbalanced modification of that pulse pattern, recurring n times in succession; the total number of cycles $(n+m)$ per repetitive pulse sequence is variable to address different repeaters with output filters tuned to the respective repetition frequencies. By altering the degree of unbalance in the second (m-cycle) portion of the pulse sequence, the fidelity of the regenerating operation of the interrogated repeater can be ascertained from the presence or absence of correlation between the number of odd pulses per cycle and the amplitude of the low-frequency wave passed by the output filter.

3,764,761

INSTANTANEOUS SWITCH

Alexandr Pavlovich Poltorak, ulitsa Schorsa, 25, kv. 1; Svyatoslav Semenovich Nedosekov, bulvar Shevchenko, 71, kv. 15, both of Donetsk; Jury Fedorovich Sameljuk, ulitsa Njutona, 139-b, kv. 6, Kharkov; Oleg Mikhailovich Vorontsov, ulitsa Shakhtera, 14, kv. 5, Makeevka, and Nikolai Nikitovich Sashkin, Stavropolsky krai, Lenina, 48, kv. 6, Selenokumsk, all of U.S.S.R.

Filed Nov. 12, 1971, Ser. No. 198,308

Int. Cl. H01h 15/18

U.S. Cl. 200—76 4 Claims

The invention relates to switches used in the automatic drive control of hoisting and conveying plant, machine-tools

and other industrial equipment and, more specifically, to instantaneous switches used as limit switches.

The instantaneous switch contains fixed contacts, fastened to the base, movable contacts, an operating element, two levers and two spiral springs. The ends of the levers are connected to the ends of the springs and bear against the fixed

limit stops made fast to the base. The free ends of the levers are hinged and carry movable contacts.

The operating element is jacked up by an opposing spring placed in a sleeve fastened to the base.

The movable contacts of the switch, built into the base, are protected by a cover fastened to the base with pipes.

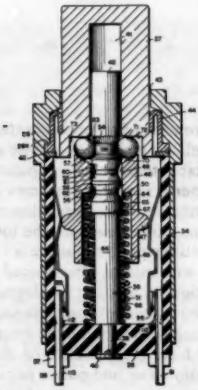
ERRATUM

For Class 200—61 see:
Patent No. 3,764,773

3,764,762
ELECTRICAL SWITCH

John O. Roeser, 414 W. Victoria Ln., Arlington Heights, Ill.

Filed Nov. 10, 1971, Ser. No. 197,412
Int. Cl. H01h *21/40*
U.S. Cl. 200—68 **19 Claims**

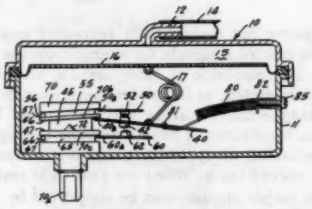


A multi-position electrical switch is provided in which the position of the switch can be determined by tactile sensation or pressure feel. The switch includes an actuating push button which is engageable with an actuating cam. The button and cam are slidably disposed on a central detent rod provided with a plurality of radially inwardly extending detent grooves and camming surfaces which determine the various positions of the switch and which provide tactile information regarding the position of the switch. Balls which are positioned between the button and the cam are receivable successively in the grooves as the switch is moved from one position to another. A coil spring resiliently biases the cam and push button against movement in one direction, and a second preloaded coil spring can be provided for providing additional biasing force on the cam and push button when the push button is depressed to a predetermined extent, thereby providing further tactile information regarding the position of the switch. Longitudinally extending contact legs are mounted within the casing, and each contact leg is provided with a camming surface to permit the cam to urge the contact leg outwardly into contact with a terminal when the cam is in one of the switch positions. The specific embodiment described and illustrated is a three position switch having two poles in which one contact leg of each pole is made and the other not made in the first position, the contacts of the first pole are reversed while the contacts of the second pole remain unchanged when the switch is moved to the second position, and the contacts of the second pole are changed while the contacts of the first pole remain unchanged when the switch is moved from the second to the third position.

3,764,763
PRESSURE SWITCH

Gene A. Barnes, Skokie, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 18, 1972, Ser. No. 218,718
Int. Cl. H01h *1/48*
U.S. Cl. 200—83 SA **11 Claims**

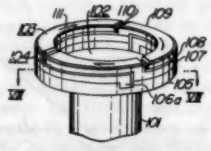


A pressure switch simple to construct, accurate over a very wide range and easily adjustable to provide various combinations of high and low levels comprises a housing, a pressure chamber, a switch blade means movable between contact with first and second movable contact means and a contact stop means having first, second and third camming means controlling respectively the first and second contact means and the switch blade means. The camming means may each be a pair of spaced opposed surfaces in the contact stop means whereby movement of the contact stop means controls the positions of the switch blade means and a movable contact means so that various levels of fluids may be controlled by the pressure switch.

3,764,764
VACUUM CIRCUIT BREAKER

Tsuneyoshi Takasuna; Hiroyuki Sugawara, and Yukio Kurosawa, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1971, Ser. No. 105,220
Int. Cl. H01n *33/66*
U.S. Cl. 200—144 B **11 Claims**



In a vacuum circuit breaker having at least a pair of electrodes which generate an arc when detached from each other in a high vacuum tank, said electrodes are made of a copper alloy containing a low-melting-point substance and opposing

contact surfaces each in the shape of a ring are placed along the periphery of the electrodes. The electrodes have about two to four grooves extending from the peripheral edge of the contact surfaces to the internal surfaces of the electrodes which are maintained detached from each other, whereby current paths in the electrodes are formed almost in parallel with the contact surfaces of the electrodes over a certain length from an arcing point in the peripheral direction at the time of ignition, thus self-driving the arc in the peripheral direction. The electrodes have on the back side thereof reinforcing materials which are mechanically strong enough to make up for the lack of the mechanical strength required for the electrodes and which are sufficiently low in electric conductivity compared with the electrode materials to such a degree so as not to allow the intensity of the magnetic field to drop to a point lower than a level required by the electrodes.

3,764,765

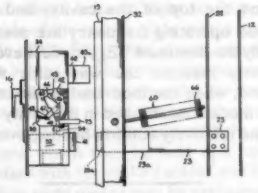
HEAT DISSIPATION MEANS FOR ELECTRIC DEVICES MOUNTED IN SWITCHBOARDS (ESPECIALLY CIRCUIT BREAKERS)

William Francis Olashaw, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed June 12, 1972, Ser. No. 261,595

Int. Cl. H01h *9/52*

U.S. Cl. 200—166 K **6 Claims**



An electric switchboard assembly including a main enclosure formed of sheet metal, and barriers extending parallel to the front wall and dividing the switchboard assembly into at least two vertical sections. The vertical section nearest the front wall of the switchboard assembly contains electrical control devices such as electric switches, fuses, circuit breakers, etc. The remainder of the assembly contains vertically extending power supply bus bars which are connected to the electrical control devices, and load connections, including load bus bars, for connecting the control devices to outgoing conductors leading to power consuming devices. The switchboard assembly also includes heat bleeding and dissipating means of the evaporating and recondensing "heat pipe" type with heat dissipating fins. Connecting means is provided so that when the electrical control devices are in mounted position in the switchboard, a heat conducting connection is formed between the device and the heat pipe cooling means, whereby heat generated in the electrical control device is conducted to the heat dissipating fins and carried away by the natural circulation of air.

3,764,766

CROSSBAR SWITCH WITH RESILIENT LAST MOTION CONNECTION BETWEEN ROW CO-ORDINATE AND INTERPOSER MEMBERS

Paul Timothy Whitehead, Coventry, England, assignor to The General Electric Company Limited, London, England

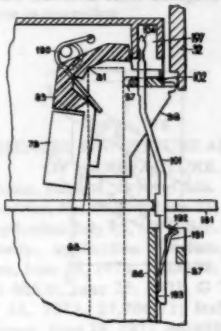
Filed Sept. 7, 1972, Ser. No. 287,051

Claims priority, application Great Britain, Sept. 8, 1971, 41,917/71

Int. Cl. H01h *67/26, 3/48*

U.S. Cl. 200—175 **6 Claims**

A crossbar switch in which a row of interposer blocks are positioned under contact operating combs by a select bar and then one of the interposer blocks is driven to operate its comb by a bridge mechanism common to a column of interposer blocks. Each interposer block is mounted on a rigid arm which pivots under the action of a select bar. The pivot end of the



arm is maintained only by a leaf spring so that if the interposer end is obstructed on pivoting, either by a design stop or by a comb if the bridge has first been operated, then distortion or overstressing is avoided by disengaging of the arm pivot.

3,764,767

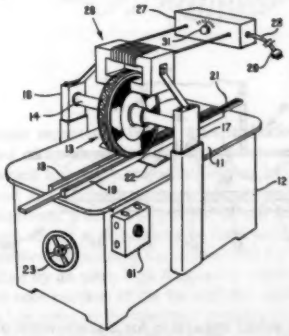
INDUCTION EMBOSSING

Arthur J. Randolph, 4711 Sonoma Hwy., Santa Rosa, Calif.

Filed Dec. 16, 1971, Ser. No. 208,837

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.49 **6 Claims**



Method and apparatus for embossing wood or the like with three-dimensional designs in which a rotary mounted embossing wheel is heated to a high temperature by induced currents. The heated wheel bears on stock driven past the wheel to emboss the stock by heat and pressure.

3,764,768

MICROWAVE APPLICATOR EMPLOYING A BROADSIDE SLOT RADIATOR

William H. Sayer, Jr., 27 Eastwood Dr., San Mateo, Calif.

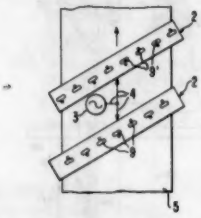
Division of Ser. No. 172,176, Aug. 16, 1971, Pat. No. 3,705,283, which is a continuation of Ser. No. 5,442, Jan. 23, 1970, abandoned. This application May 19, 1971, Ser. No. 255,287

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **9 Claims**

A microwave applicator for treating material with microwave energy is disclosed. The applicator includes a

broadside radiator formed by a hollow elongated waveguide having an array of resonant slots communicating through the wall of the waveguide, such slots being spaced apart on their centers along the axis of the guide by one half a guide wavelength an array of slot loading members are disposed to project into the waveguide from alternate sides of adjacent



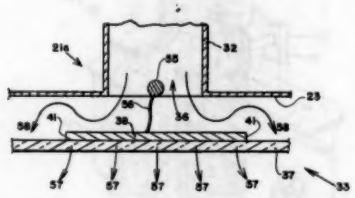
slots for coupling microwave energy from the waveguide radiator through the slots in an in-phase relation to obtain a broadside radiator. The loading members may be separately adjusted for adjusting the energy profile coupled from the antenna to the load.

3,764,769

MICROWAVE OVEN APPARATUS

Arthur Y. C. Tang, Framingham, Mass., assignor to General Diode Corp., Framingham, Mass.

Filed Mar. 22, 1972, Ser. No. 236,846
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **13 Claims**



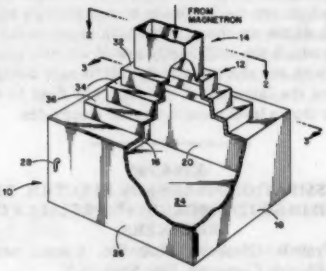
Disclosed is a shield apparatus for a microwave oven. The shield is situated adjacent to a wall of a cooking chamber that defines an opening which is the termination of a waveguide that carries high frequency energy from an energy source to the cooking chamber. A non-electrically conductive shield surface optically shields the opening and an electrically conductive redirector diffuses energy emanating from the waveguide so as to prevent "hot spots" within the cooking chamber. In preferred embodiments that are disclosed herein the shield surface is a sheet of heat resistant glass and the redirector is metallic and of a substantially smaller surface area than the glass and is laminated thereto. The redirector may be a metal plate, metallic material deposited on the glass, metal rings, etc. Another preferred embodiment disclosed herein includes a metallic shorting bar across the opening that protects the high frequency energy source by preventing high frequency energy within the cooking chamber from entering the waveguide. In addition, the shorting bar and the redirector are electrically connected and function as a large surface area antenna and thereby distribute the high frequency energy still more evenly throughout the cooking chamber.

3,764,770

MICROWAVE OVEN

Theodore S. Saad, Westwood, and Matthew S. Miller, Holliston, both of Maine, assignors to Sage Laboratories, Inc., Natick, Mass.

Filed May 3, 1972, Ser. No. 249,880
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 **24 Claims**



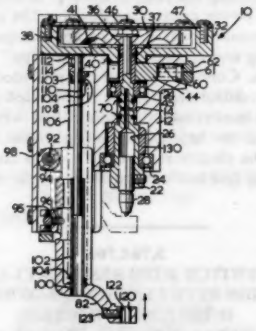
A source of microwave energy such as a magnetron feeds the energy via a waveguide to preferably the top of a microwave cavity having access thereto for disposing food therein. A quarter wavelength transformer intercouples the waveguide and the top of the cavity, and the waveguide dimensions and operating frequency are preselected so that preferably only the dominant $TE_{1,0}$ mode is excited. The transformer properly matches the waveguide with the cavity dimensions and, when the food load is disposed in the oven, the dominant mode is established in the cavity thereby causing predictable and relatively uniform heating over a useable area of the cavity.

3,764,771

APPARATUS ATTACHABLE TO AN EDM FOR ROTATING ELECTRODE

Henry Roy, Montreal, Quebec, Canada, assignor to DBM Industries Limited, Montral, Quebec, Canada

Filed July 20, 1971, Ser. No. 164,292
Claims priority, application Canada, Mar. 18, 1971, 108091
Int. Cl. B23p 1/08
U.S. Cl. 219—69 V **7 Claims**



A holder or supporting apparatus is described for use on an electrode discharge machine (EDM) for both holding and rotating an electrode. The apparatus utilizes a turbine wheel driven from the pressurized dielectric fluid available on an EDM, for rotating a chuck or collet in which the electrode is carried. Means are also provided to guide the electrode, using an interchangeable guide bushing to accommodate electrodes of various diameters.

3,764,772

APPARATUS FOR INFRARED SOLDERING

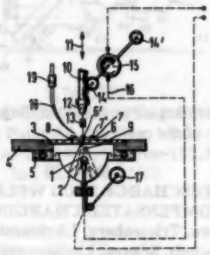
Max Matuschek, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 14, 1972, Ser. No. 217,727

Claims priority, application Germany, Feb. 5, 1971, P 21 05 513.0

Int. Cl. B23k *1/02*

U.S. Cl. 219—85 7 Claims



A safe, easily controlled method and apparatus for infrared soldering of component means to a carrier plate means includes the steps of positioning a carrier plate means on a filter plate means, which filter plate is of a material that absorbs visible light and allows infrared light to pass therethrough, with the lower side of the carrier plate means generally resting on an upper side of the filter plate means, providing a source of infrared light below the filter plate means and projecting it through the filter plate means against the lower side of the carrier plate means whereby solder at a solder point on the carrier plate means is heated from the infrared light and melts. The component means which may be held in a holder means is moved into contact with the melted solder and the connection effected. The filter plate means may be preheated by a heating means in the base of the apparatus surrounding the filter plate means. A control means moves the holder means and adjusts the energy of the infrared light source in relation to the position of the holder means with respect to the carrier plate means. A reflector allows exact focusing of the infrared light on the carrier plate means at a point opposite the solder point.

3,764,773

DEVICE FOR STOPPING A YARNWORKING MACHINE IN RESPONSE TO THREAD TENSION

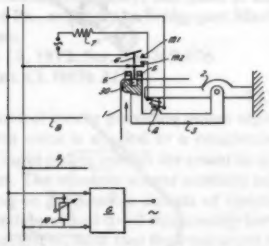
Eberhard Merkle, Stuttgart, Germany, assignor to Wilh. Bleyle KG, Stuttgart, Germany

Filed Mar. 14, 1972, Ser. No. 234,479

Claims priority, application Germany, Mar. 30, 1971, P 21 15 274.9

Int. Cl. B65h *25/14*

U.S. Cl. 200—61.18 13 Claims



A process and device for stopping a yarnworking machine is disclosed. The device comprises a thread holder which is maintained in operative position by holding means of predetermined force; switching means electrically coupled to the holding means such that thread being processed through the machine is conducted through the thread holder and maintained at a predetermined tension; the switching means being operative at the predetermined tension to maintain the yarnworking machine in operation.

3,764,774

I-TYPE SEGMENTED FINNED TUBE AND ITS METHOD OF MANUFACTURE

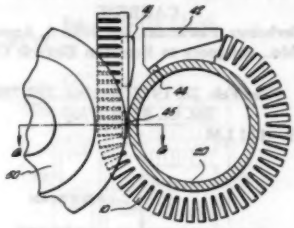
Robert Carl Boose, Route 1, Pryor, Okla.

Continuation of Ser. No. 49,874, June 25, 1970, abandoned. This application July 13, 1972, Ser. No. 271,228

Claims priority, application Belgium, June 25, 1971, 105130; France, June 24, 1971, 7123108; Germany, June 23, 1971, P 21 31 085.0; June 23, 1971, G 71 24 100.4; Great Britain, June 14, 1971, 27,706/71; Italy, June 24, 1971, 69157 A/71; Japan, June 25, 1971, 46/45802

Int. Cl. B23k *1/16*

U.S. Cl. 219—62 10 Claims



An I-type segmented finned tube is disclosed having a fin composed of an elongated flat strip of metal, the upper portion of which forms the major fin portion having a plurality of segmented fins formed thereon and extending radially outward therefrom. The lower portion of the flat strip forms the base which serves as a contact area for a welding electrode.

The method of bonding the segmented fin to the tube is accomplished by an ultra-high frequency welding process which melts the root portion of the fin and the registering surface of the tube just prior to their mutual engagement. A force is then applied to the tips of the fins at the point of mutual engagement to forge the molten root portion of the fin to the molten surface of the tube to create a fused bond therebetween.

3,764,775

ERROR COMPENSATION IN TOOL MOVEMENT OVER INTERMITTENTLY ADVANCED WORK SUPPORT SURFACE

Robert L. Hasslinger, Simi; William J. Newton, Lakewood; Esteban J. Toscano, Oceanside, and Rodolfo Castro, San Juan Capistrano, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

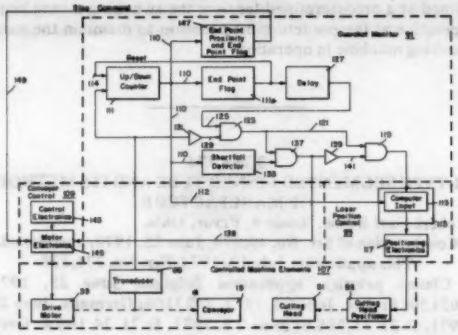
Filed Jan. 19, 1972, Ser. No. 218,933

Int. Cl. B23k *27/00*

U.S. Cl. 219—121 L 4 Claims

In a laser cutter, cloth to be cut is advanced to enter the cutting area by means of a conveyor. The conveyor is advanced in steps, stopping before each cutting operation.

Deviations of the actual stopping positions of the conveyor from its nominal stopping positions are compensated for by



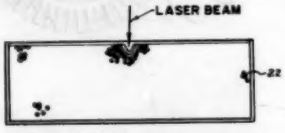
appropriately modifying the cutting path followed by the laser beam.

3,764,776

METHOD OF MAKING COHERENT SHAPE OF SILICON CARBIDE

Frank J. Hierholzer, Florissant, and John A. Ancona, St. Louis, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 28, 1972, Ser. No. 229,789
Int. Cl. B23k 27/00
U.S. Cl. 219—121 LM 11 Claims



A coherent shape of silicon carbide is produced by heating particulate silicon carbide to a temperature above 3,000° F. and below 5,500° F. and subsequently cooling the silicon carbide below 3,000° F., both steps being completed within a period of 30 minutes. In the preferred method, the particulate silicon carbide is exposed to the energy of a laser beam, and the particulate silicon carbide has a minimum particle size greater than ten microns. The preferred shape has a core with a relatively low resistivity of the magnitude of the order of 0.05 to 100 ohms per linear inch and a distinctly delineated rind with a relatively high resistivity which may be removed if lower thermal mass is required by a specific application.

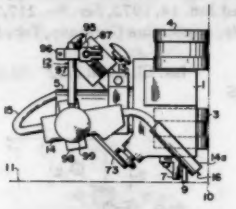
3,764,777

AUTOMATIC WELDING METHOD AND APPARATUS

Akira Sakabe, Urawa-shi; Mitsuhiro Sakagami, and Kunio Arai, both of Funabashi-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 20, 1972, Ser. No. 219,439
Claims priority, application Japan, Jan. 22, 1971, 46/1575; Feb. 22, 1971, 46/7978
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 13 Claims

A self-driven welding carriage with a welding torch mounted on it and travelling along a path with a side of work or plate perpendicular to the path as a guide while being magnetically adhered to the path, said carriage being sufficiently small in size to be capable of travelling even along a narrow path, said carriage being provided with a weaving means for helping deepen the penetration into the weld zone; and a



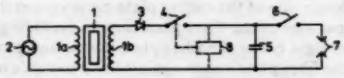
method of performing all-position welding on a wide variety of joints by the use of the carriage.

3,764,778

CAPACITOR DISCHARGE STUD WELDING APPARATUS WITH COMPENSATED CHARGING CURRENT

Dankmar Tauern, Triesenberg, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Feb. 17, 1972, Ser. No. 227,041
Claims priority, application Germany, Feb. 19, 1971, P 21 08 104.9
Int. Cl. B23k 9/10
U.S. Cl. 219—131 WR 25 Claims



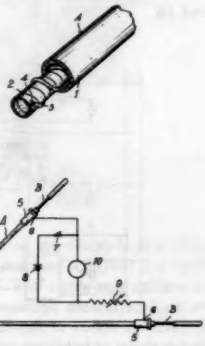
In the apparatus disclosed, welding is accomplished by discharging a bank of capacitors through a pair of electrodes. A transformer energizes a rectifier bridge that charges the capacitor bank through a switching arrangement. The primary winding of the transformer is loosely coupled to the secondary winding, at least at higher loads on the secondary side. This eliminates the high current surge at the beginning of each charging cycle and minimizes the required current-carrying capabilities of the rectifier bridge and switching arrangement.

3,764,779

WINTERIZED CONTROL CABLE

Teruichi Kadoya, Takarazuka; Kunio Kobayashi; Tetuo Kobayashi, both of Nishinomiya, and Yasuyuki Koga, Takarazuka, all of Japan, assignors to Takarazuka Control Cable Co., Inc., Hyoyo-ken, Japan

Filed May 24, 1971, Ser. No. 146,150
Int. Cl. H05b 1/00; F16c 1/10
U.S. Cl. 219—201 7 Claims



A winterized control cable composed of an inner cable slidable in an outer tube is provided with at least one heat

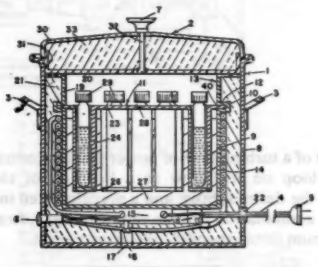
generating wire for preventing water droplets between the inner cable and the outer tube from freezing and to prevent the lubricant filling between the cable and tube from solidifying. The heating element or elements can be disposed in either the inner cable or the outer tube. Alternatively the heating element or elements can be disposed between an outer covering and the outer surface of the tube or between a plastic sleeve housed in the tube and the inner surface of the tube. The control cable disclosed is particularly use for remote control of clutch, throttle, brake and the like of automobiles and snowmobiles.

3,764,780

BLOOD CULTURE APPARATUS

Charles A. Ellis, 501 Point Rd., Marion, Mass.

Filed June 16, 1971, Ser. No. 153,599
Int. Cl. F27d *11/02*
U.S. Cl. 219—430 4 Claims



A portable apparatus for use in hospitals for the collection and preparation of blood samples under controlled conditions comprising a culture-tube holder in a heavily insulated heat sink provided with thermostatic controlled heater for connection to public service power during the heat-up time in the laboratory; and the heat sink enhanced in effectiveness by the use of a fusible material such as paraffin for the purpose of maintaining a constant temperature environment for the culture tubes while the apparatus is being transported to the hospital rooms, where the blood samples are taken, and then back to the laboratory for incubation. The paraffin, of a pure form, characteristically has a sharp melting point and absorbs heat during the melting period which is returned at constant temperature as the material freezes.

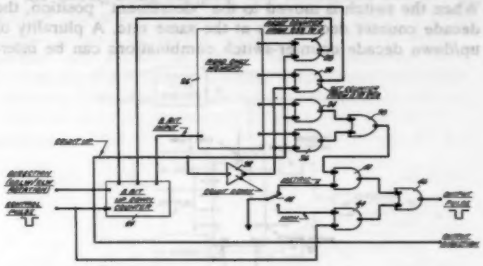
3,764,781

DEVICE FOR INTERCHANGING MEASUREMENT SYSTEMS

Marvin L. Kreithen, Huntingdon Valley, and John J. Lawler, Newportville, both of Pa., assignors to Bridgeport Machines, Inc., Bridgeport, Conn.

Filed July 10, 1972, Ser. No. 269,976
Int. Cl. H03k *21/30*
U.S. Cl. 235—92 PE 7 Claims

The output from a control means providing pulses representative of English system units is applied to a countermeans, which, as it counts the input pulses applies the count as an output to a memory means. The memory means contains storage locations corresponding to permissible counts of counter to provide a pattern of predetermined fixed relationship between the English and Metric system, such that for each input count a predetermined output in terms of Metric measurement is provided. The memory system also provides means for adjusting the count in the counter and specifically, depending upon the direction of counting, readjusts the counter to zero upon completion of a predetermined number of steps in a repeatable pattern and when counting down skips the counter to the last predetermined count of a finite number of steps in said pattern.

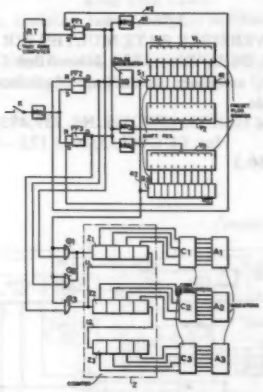


3,764,782

TAXI METER WITH ELECTRONIC FARE COMPUTER

Siegfried Spauszus, Villingen; Manfred Fichter, Weiler, and Heinz Kelch, Buchenberg, all of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany

Filed June 16, 1972, Ser. No. 263,430
Claims priority, application Germany, June 24, 1971, P 21 31 272.1
Int. Cl. G07b *13/00*
U.S. Cl. 235—92 TC 6 Claims



In a taxi meter having an electronic calculating part serving to calculate the fare on the basis of time and distance such calculating part furnishes a sequence of first pulses each representing a fare increment equal to the selectable number of monetary units. The sequence of first pulses is multiplied in a presettable manner with the fare increment to provide adequate indication by fare indicating means. Basic fare setting means are provided to deliver a pulse at the beginning of each trip, which is also multiplied in accordance with monetary value of basic fare for indication.

3,764,783

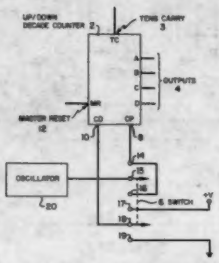
DELAY-INTERVAL SELECTION FOR A DIGITAL DELAY GENERATOR

Frank D. Terry; Charles H. House, both of Colorado Springs, and Virgil C. West, Longmont, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 12, 1972, Ser. No. 297,102
Int. Cl. H03k *21/00*, *21/36*
U.S. Cl. 235—92 EV 2 Claims

An up/down counter is interconnected with a clock using a double-throw momentary contact switch to form a one decade

interval select control. When the switch is moved to the "increment" position, the decade counter increments at a rate determined by pulses supplied by a low frequency oscillator. When the switch is moved to the "decrement" position, the decade counter decrements at the same rate. A plurality of up/down decade counter-switch combinations can be inter-



connected to form multi-decade interval select controls. In this configuration, when any particular counter increments or decrements through a decade, a signal is sent to the next higher counter, which then increments or decrements appropriately.

3,764,784

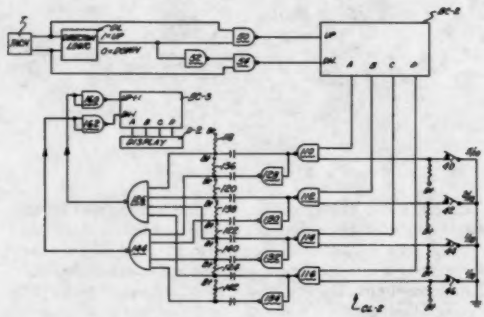
REVERSIBLE RATE MULTIPLIER

Lambert Haner, Rocky River, and John Allen Gill, Medina, both of Ohio, assignors to Antron Manufacturing, Inc., Cleveland, Ohio

Filed Mar. 30, 1972, Ser. No. 239,493

Int. Cl. G06f *15/20*

U.S. Cl. 235—150.3 **17 Claims**



A rate multiplier is provided for multiplying a pulse train by a calibration factor less than unity so that for a given number of input pulses the number of output pulses will be a fraction thereof in accordance with the calibration factor. The rate multiplier employs an up/down reversible counter having at least one decade of binary counting stages. The counting stages provide non-carry transitions which are passed as output pulses in dependence upon a selected calibration factor. The input pulse train may be unidirectional or bidirectional. The counter is controlled to count up or down in dependence upon the direction of the input pulse train. Logic circuits are employed for preventing an erroneous count from occuring when an input pulse train reverses its direction.

3,764,785

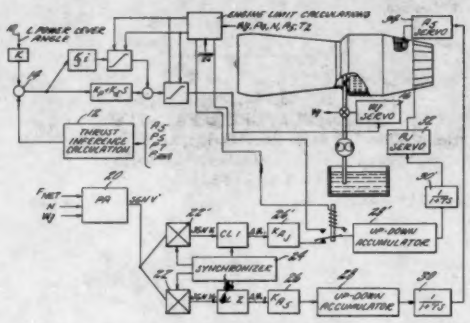
TURBINE POWER PLANT CONTROL SYSTEM

Kermit I. Harner, Windsor, and Roy W. Schneider, Ellington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 29, 1970, Ser. No. 85,045

Int. Cl. F02c *9/04*

U.S. Cl. 235—150.21 **4 Claims**



Thrust of a turbine type of power plant is controlled by closing the loop on fuel flow as a function of the difference between the desired thrust and a precalculated inferred thrust signal in combination with an optimization system for obtaining optimum thrust specific fuel consumption.

3,764,786

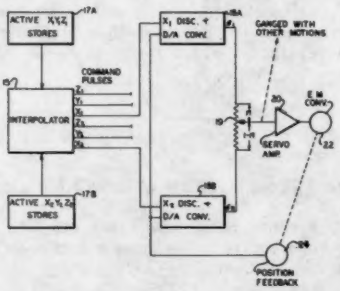
CUTTER DIAMETER COMPENSATION FOR NUMERICAL CONTROL MACHINE TOOLS

Verne E. Vawter, Bonita, and William D. Wilson, San Diego, both of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 5, 1972, Ser. No. 250,696

Int. Cl. G05b *19/24*

U.S. Cl. 235—151.11 **7 Claims**



Each time the rotary bit of a milling machine is sharpned, the diameter of the bit is reduced and the spindle carrying the bit must be shifted with respect to the workpiece. Where the path of the spindle is defined by a record or "program" of binary numbers on a punched tape or on a magnetic drum or disc, a different program must be composed for each bit size. This invention obviates all of the many programs and most of the computer memory storage. A program for the maximum and minimum cutter bit diamters, only, are composed and stored and the readout of these two values are combined in a fixed ratio n and applied to the controls of the machine tool.

3,764,787

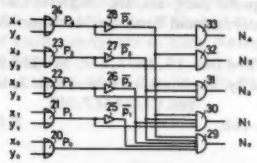
METHOD AND APPARATUS FOR PULSE DISTRIBUTION WITH VARIABLE TIME INTERVAL FOR PULSE TRAIN GENERATION

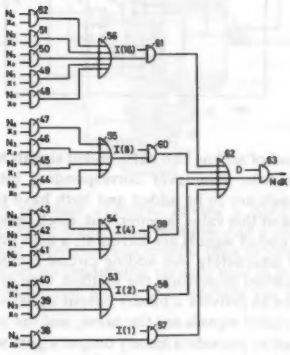
Ritsuzo Yamanaka, Suginami-ku, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 860,197, Sept. 23, 1969, abandoned. This application Oct. 12, 1971, Ser. No. 188,549

Int. Cl. H03k *5/13*

U.S. Cl. 235—152 8 Claims





A method for pulse distribution includes the detection of the highest bit position in a plural bit input. A pulse sending interval corresponding to the highest input bit position is determined, and pulse trains corresponding to the highest bit position and the input bits are selected. A pulse train sum is then generated by selected pulse trains during the pulse sending interval.

3,764,788

ERROR CHECKING CIRCUIT

Se J. Hong; Darryl S. Jones, and Daniel L. Ostapko, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

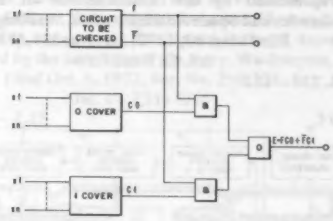
Filed June 30, 1972, Ser. No. 267,797

Int. Cl. G06f *11/00*

U.S. Cl. 235—153 A 10 Claims

A new circuit is provided for checking for errors caused by most but not all of the faults that might occur in a network of logic gates. One part of the checking circuits, called a "1 cover" produces an output that is designated C1, and includes selected prime implicants of the function, F, of the newtork being checked. Thus, if there is no fault in either the circuit being checked or in the 1 cover circuit, C1 = 1 implies that F = 1. A comparison circuit is provided to produce an error signifying output, E, for the condition C1 = 1 and F = 0.

Similarly, another part of the checking circuit, called a "0 cover" produces an output that is designated CO and includes selected prime implicants of the complement, F, of the circuit being checked. The comparison part of the



checking circuit detects the condition CO = 1, F = 0, as an error condition.

Thus, the checking circuit of this invention operates according to the equation E = FCO + FC1. The circuit responds to a high portion of the possible faults in the circuit being checked but it has many fewer components than the circuit being checked.

3,764,789

AUTOMATIC CONTROL SYSTEM FOR HOT-STRIP MILL AND THE LIKE

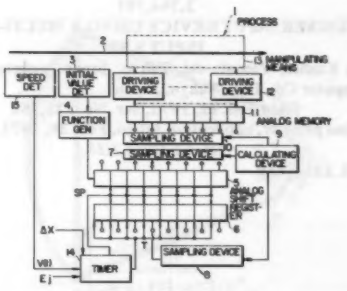
Akinao Nara, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1971, Ser. No. 208,634

Claims priority, application Japan, Dec. 16, 1970, 45/111801

Int. Cl. G05b *11/01*

U.S. Cl. 235—151.1 16 Claims



In a cooling process for a hot-strip mill wherein cooling water is sprinkled on a strip from a plurality of spray banks thereby to cool the strip and to control the winding temperature thereof, the temperature of the strip at the inlet of the process is detected, the initial value of a function prescribing a desired temperature falling rate is calculated from the detected value, and it is applied to a first analog shift register.

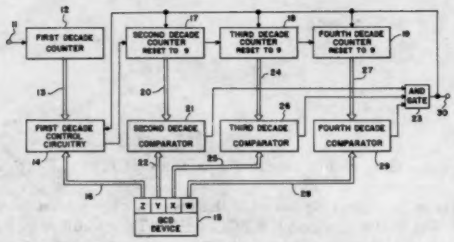
At every movement of the strip by the unit distance, the moving period of time is detected to be applied to the respective elements of a second analog shift register. Simultaneously therewith, shift pulses are applied to both the registers.

The respective elements of both the registers are subjected to sampling to calculate a predetermined cooling power by a calculating device. The calculated value is distributed to the respective driving devices, to thereby manipulate the spray banks.

3,764,790
TECHNIQUE FOR EXTENDING THE FREQUENCY RANGE OF DIGITAL DIVIDERS

Walt C. Long, Hampton, and Joan H. Middleton, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1972, Ser. No. 239,573
Int. Cl. G06f 7/39
U.S. Cl. 235—152 **4 Claims**

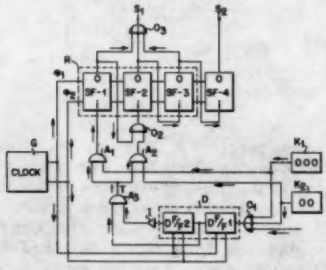


A technique for extending the frequency range of a presettable digital divider. The conventional digital divider consists of several counter stages with the count of each stage compared to a preselected number. When the counts for all stages are equal to the preselected numbers, an output pulse is generated and all stages are reset. For high input frequencies, the least significant stage of the divider has to be reset in a very short time. This limits the frequency that can be handled by the conventional digital divider. This invention provides a technique in which the second least significant and higher stages are reset and the least significant stage is permitted to free-run. Hence, the time in which the reset operation can be performed is increased thereby extending the frequency range of the divider.

3,764,791
NUMBER INPUT DEVICE USING A MULTI-ZERO INPUT KEY

Toshio Kashio, Yamato-shi, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Feb. 22, 1972, Ser. No. 228,252
Claims priority, application Japan, Feb. 24, 1971, 44/8630
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **4 Claims**

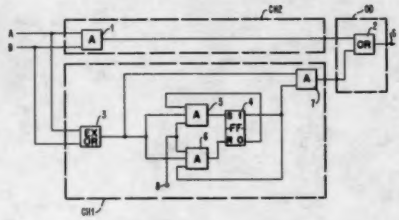


A number input device for supplying a carry signal to a carry control circuit in controlling the carry of input numbers representing consecutive orders by single key operation, wherein there are generated by key means signals of input numbers representing prescribed consecutive orders. Said input key signals are conducted through a timing circuit to a carry signal generating circuit including a delay shift register which is operated by output from a clock pulse generator as well as by input key signals controlled in timing by output from said clock pulse generator, so as to supply a carry signal to the first one of the respective bits. The bit from which there is obtained a final carry signal by said carry signal generating circuit is connected in series to another bit from which there is successively produced a function signal.

3,764,792
METHOD AND APPARATUS FOR ADDING TWO DELTA CODED SIGNALS

Christian Augustin Jacquart, La Clapiere, Carros, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,094
Claims priority, application France, Feb. 2, 1971, 7104513
Int. Cl. G06f 7/385
U.S. Cl. 235—168 **9 Claims**

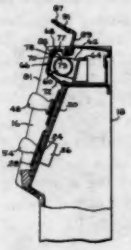


A method of adding two delta coded signals having the same binary bit rate. Whenever corresponding bits of two delta coded signals are to be added and both have the same binary value, a bit of this value is generated. Each time the bits of said two delta coded signals are different, a zero bit or a one bit is generated alternately. An adding circuit including two channels is disclosed to perform the method. One of the channels is constructed to provide a binary output signal when the bits of the delta coded signals are the same, and the other channel is constructed to provide a binary output signal when bits of the delta coded signals are different. The output of the two channels are combined to obtain the half-sum of the delta coded signals which can be used in digital recursive filtering techniques.

3,764,793
LIGHTED CONTROL CONSOLE WITH INFORMATION CENTER

Thomas J. Binzer, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 1, 1972, Ser. No. 302,773
Int. Cl. F21v 33/00
U.S. Cl. 240—2 PA **5 Claims**



An appliance control console having a hollow housing with a front control panel. An electrical lamp is located above the

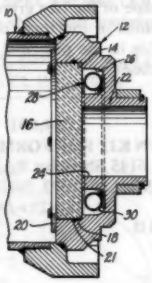
control panel for illuminating the panel. A combined lamp shield and information center is assembled over the lamp so the lamp is hidden from view. A front wall of the lamp shield is at least partially translucent, and it is imprinted with operating instructions which are capable of being illuminated by the lamp. A movable cover plate is provided to cover the lamp shield and its operating instructions, and this conver plate may be raised to expose the lamp shield and the operating instructions carried thereby.

3,764,794

ILLUMINATION AND VIEWING SYSTEM FOR VACUUM OR PRESSURE CHAMBER

James Robert King, Van Nuys, and Gerald D. Myers, Sepulveda, both of Calif., assignors to King Nutronics Corporation, Van Nuys, Calif.

Filed May 5, 1972, Ser. No. 250,594
Int. Cl. F21v 33/00
U.S. Cl. 240—2 R 4 Claims



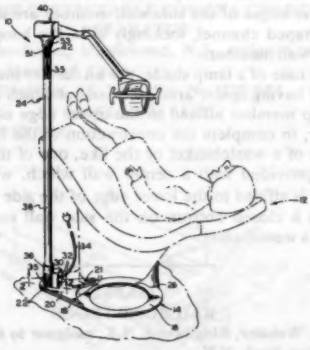
A vacuum or pressure chamber having a door provided therein with a circular transparent window and a circular, tubular viewing port in front of and smaller than the window. An annular lamp encircles the tubular viewing port in front of and adjacent the window and serves to illuminate the interior of the chamber.

3,764,795

LIGHT BASE FOR A DENTAL CHAIR

George K. Austin, Jr., 604 Holly Dr., Newberg, Oreg.

Continuation of Ser. No. 869,089, Oct. 24, 1969, abandoned.
This application Mar. 17, 1972, Ser. No. 235,522
Int. Cl. F21v 33/00
U.S. Cl. 240—2 R 9 Claims



A light base has a base plate covered and pressed against the floor by a base of a dental chair, and a post-like upright assembly mounted on a mounting plate supports a lamp. The base plate is annular in shape and has a triangular portion projecting out from the base of the chair. A triangular plate having a surface in abutting relationship with the chair base is positioned in face-to-face engagement with the base plate projection.

3,764,796

CHEMICAL LIGHTING DEVICE

Clarence W. Gilliam, Bloomington, Ind., and Thomas N. Hall, Adelphi, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1972, Ser. No. 295,335
Int. Cl. F21v 9/16
U.S. Cl. 240—2.25 3 Claims

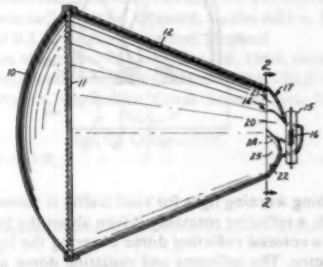
A chemical lighting device having an outer cylindrical sleeve of light transmitting material and first and second frangible ampoules positioned within said outer cylindrical sleeve. Indentions are provided in the outer cylindrical sleeve for keeping the ampoules separated in the cylindrical sleeve. One ampoule contains a chemiluminescent material and the other ampoule contains an activator material. The ampoules can be broken by bending the outer cylindrical sleeve and light is obtained when the chemiluminescent material and activator are mixed.

3,764,797

VEHICLE HEADLIGHT

Harlan L. Krinke, May Twp., Cty. of Washington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 27, 1972, Ser. No. 247,960
Int. Cl. F21m
U.S. Cl. 240—7.1 7 Claims



A vehicle headlight has a condensing lens in its front portion. At the rear, the reflector has a sausage-shaped cavity with the lamp positioned therein. A shield is positioned at the lower lefthand side of the headlight to reduce light to the oncoming land of traffic.

3,764,798

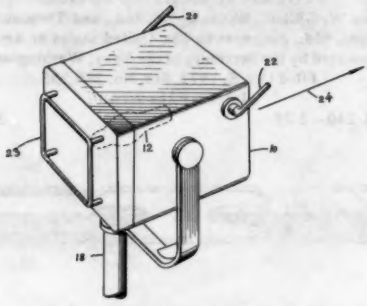
SIGNALING SEARCHLIGHT

Herbert R. Manke, New London, and James P. Flatley, Norwich, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 24, 1972, Ser. No. 309,409
Int. Cl. F21q 1/00
U.S. Cl. 240—22 5 Claims

A signaling searchlight having a lightweight internal shutter comprising a sliding cylinder which is mounted between a

lamp and a reflector. Light of selected wavelengths is filtered from the beam emitted by the lamp to obtain a beam for transmitting coded information. The sliding cylinder is moved to transmit or to block off the light beam from reaching the reflector. Retraction of the cylinder to the off position blocks



off the beam from the reflector and is also correlated with the means for reducing the power of the lamp. The sliding cylinder moved to the on position allows the beam to reach the reflector and is also correlated with means for applying full power to the lamp.

3,764,799

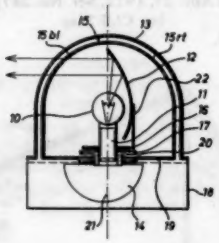
FLASHING WARNING LIGHT

Dietrich Schulz, Bietigheim, Germany, assignor to SWF-Spezialfabrik Fur Autozubehor Gustav Rau GmbH, Wuerttemberg, Germany

Filed May 30, 1972, Ser. No. 257,783

Int. Cl. F21l *15/04*

U.S. Cl. 240—24 **7 Claims**



A flashing warning light for road traffic is formed of a fixed light bulb, a reflector rotatably driven about the bulb by a motor, and a colored radiating dome covering the light bulb and the reflector. The reflector and radiating dome are interconnected so that the dome rotates with the reflector. The dome is formed of two differently colored half domes. The reflector can be made to rotate in either direction by the motor and, due to the connection between the reflector and the dome, in each direction of rotation a different colored half of the dome is positioned in front of the reflector.

3,764,800

COVER PLATE FOR A LAMP

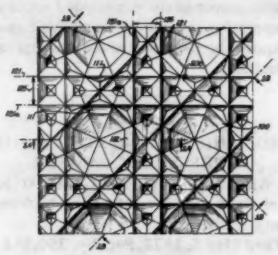
Friedrich Clostermann, Hagen, Germany, assignor to Trilux-Lenze KG, Neheim-Husten, Germany

Continuation-in-part of Ser. No. 38,702, May 19, 1970, abandoned. This application Oct. 17, 1972, Ser. No. 298,199

Int. Cl. F21v *5/04*

U.S. Cl. 240—106 R **5 Claims**

A cover plate for a lamp, formed on its surface with centrically symmetrical light-refractory configurations. The entire surface of the plate is traversed in at least three different angular directions by straight, parallel ribs of simple or modified V-section, of which the vertex lines defining the crests of the ribs divide the plate, when viewed in plan, into principal divisions in the form of hexagon, octagon or decagon depressions with



intervening secondary divisions in the form of smaller triangular depressions and possibly polygon depressions, and the cross-sectional shape of the ribs gives rise to the formation of prismatic depressions in the form of inverted principal and secondary pyramids in the principal and secondary divisions which form their bases.

3,764,801

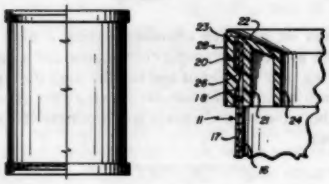
KNOCK-DOWN KIT FOR FORMING LAMP SHADES

Walter Mainieks, 6145 Sheridan Rd., Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,497

Int. Cl. F21v *1/00*

U.S. Cl. 240—108 D **10 Claims**



A knock-down kit for forming a lamp shade, a waste-basket and other similar types of articles. The knock-down kit includes as its principal elements a side wall member and a pair of hoop members which are formed with a U-shaped channel for receiving therein the upper and lower edges, respectively, of the side wall member. The hoop members include locking means within the U-shaped channel which, when the upper and lower edges of the side wall member are inserted within the U-shaped channel, lockingly affix the hoop members to the side wall member.

In the case of a lamp shade, the kit further includes a spider member having spider arms, the ends of which are secured to the hoop member affixed to the upper edge of the side wall member, to complete the construction of the lamp shade. In the case of a wastebasket or the like, one of the hoop members is provided with a center wall which, when the hoop member is affixed to the lower edge of the side wall member, provides a closed bottom on the side wall member, hence forming a wastebasket.

3,764,802

RAILROAD FROGS

David D. Webster, Ridgewood, N.J., assignor to Abex Corporation, New York, N.Y.

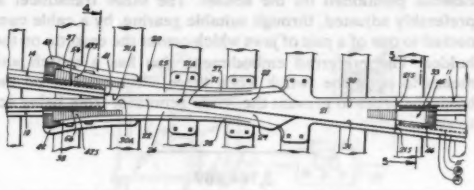
Filed May 4, 1972, Ser. No. 250,371

Int. Cl. E01b *7/10*

U.S. Cl. 246—468 **5 Claims**

A railroad frog casting is characterized by a heel extension having opposed sides spaced laterally from the opposed track

rails at the heel end of the frog with adapters fitted in the resultant spaces; the wing rail element have extensions lapping



the track rails at the toe of the frog and are also spaced laterally therefrom so that adapters may be fitted in the resultant spaces.

3,764,803

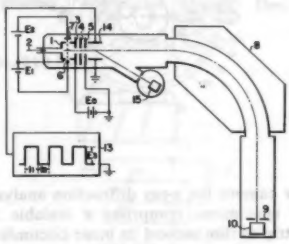
MASS SPECTROMETER

Yasuo Nakajima, Katuta-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 27, 1971, Ser. No. 147,313

Int. Cl. H01j *39/34*

U.S. Cl. 250—41.9 D **10 Claims**



A mass spectrometer comprising an ionization chamber, an ion accelerator, a magnetic analyzer, and a collector for obtaining a mass spectrum, which collector is connected to an indicator; wherein a deflecting electrode for supplying accelerated ions to an electron multiplier at a certain definite cycle for a certain definite period is disposed between said ion accelerator and magnetic analyzer, which electron multiplier determines the total ion current.

3,764,804

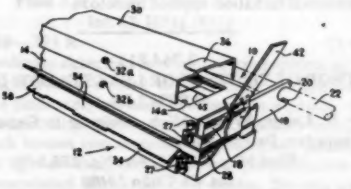
OPERATOR SERVICEABLE CORONA CHARGING APPARATUS

Howard I. Hirschman, Maplewood, N.J., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 24, 1972, Ser. No. 220,054

Int. Cl. G03g *15/00*

U.S. Cl. 250—49.5 ZC **5 Claims**



A corona charging assembly for electrostatic copy machines is disclosed as having an elongated U-shaped shell and an elongated U-shaped, snap-on cover for access through a backwall opening in the shell to the corona wires for cleaning thereof. In practice, two opposed charging assemblies are employed and are readily removable from the machine by disengagement from mounting means and plug-in high voltage connections.

3,764,805

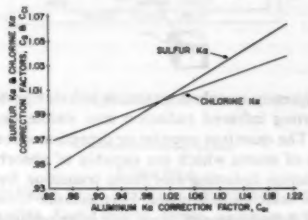
CONTROL OF PROPELLANT COMPOSITIONS BY X-RAY FLUORESCENCE ANALYSIS

Bernard J. Alley, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Continuation-in-part of Ser. No. 306,393, Sept. 3, 1963, abandoned. This application July 6, 1967, Ser. No. 652,654

Int. Cl. G01n *21/00*

U.S. Cl. 250—51.5 **17 Claims**



The use of multiple linear regression analysis in correlating the data obtained by the X-ray fluorescence analysis of propellant compositions. Ingredient concentrations and particle sizes are predicted by means of multiple regression equations which relate characteristic emission line intensities with particle sizes and ingredient concentrations. These equations give more accurate predictions than simple regression equations which are commonly used.

3,764,806

RADIOGRAPHIC EXAMINATION OF PIPE JOINTS

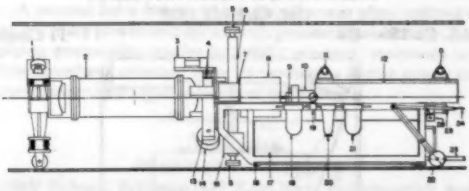
Ian G. Redmayne, Leighton Buzzard, Bedfordshire, England, assignor to B.I.X. Limited, Buzzard, England

Continuation of Ser. No. 701,649, Jan. 30, 1968, abandoned. This application Apr. 14, 1971, Ser. No. 134,074

Claims priority, application Great Britain, Jan. 31, 1967, 4,727/67

Int. Cl. G01n *23/00*

U.S. Cl. 250—65 R **6 Claims**



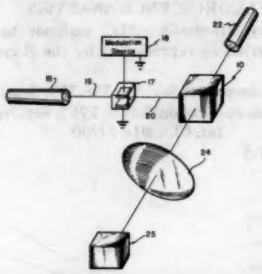
The specification of this application discloses improved methods and apparatus for radiographically examining welded joints in pipelines, during laying of such pipelines, using a signal source outside the pipe to automatically control the positioning of a self-propelled vehicle carrying a radiation source inside the pipe, such vehicle utilizing a source of compressed air, provided for the internal line-up clamp necessary in pipeline laying, to generate electricity for powering the electrical circuitry of the vehicle, thereby avoiding the necessity of trailing power supply cables in the pipeline in addition to the compressed air line.

3,764,807

SYSTEM FOR CONVERTING INFRARED INTO SHORTER WAVELENGTH RADIATION

Slava A. Pollack, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed May 4, 1972, Ser. No. 250,137
Int. Cl. G01j *3/02*
U.S. Cl. 250—330 **10 Claims**



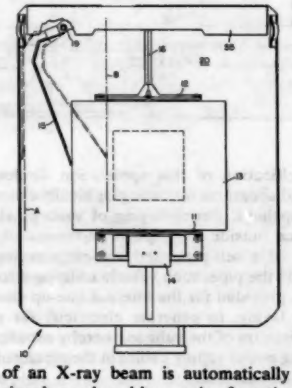
The frequency matched quantum counter principle is used for converting infrared radiation into visible or near visible radiation. The quantum counter or detection screen utilize the properties of atoms which are capable of absorbing infrared signal radiation inducing electronic transition from a ground state to an intermediate state. Furthermore these atoms are capable of being pumped from the intermediate state to an upper state. The return transition of electrons from the upper state to the ground state which occurs with emission of visible or near-visible radiation can then be detected with a photodetector. The pumping of the active atoms of the quantum counter is accomplished by means of a first laser which is made of a material which contains the same atoms as those effective in the quantum counter. The radiation from this first laser may be modulated by a suitable modulator or may be modified or perturbed by an object to be viewed or depicted. For signal generation a second laser can be used in which the radiation is generated by the same active atoms as the quantum counter. By way of example, the active atoms may consist of triply ionized erbium or triply ionized neodynium both in a suitable matrix.

3,764,808

APPARATUS FOR AUTOMATICALLY LIMITING THE SIZE OF AN X-RAY BEAM IN RESPONSE TO CASSETTE SIZE

Ray R. Lackey, Madeira, and Carold R. Henninger, Reading, both of Ohio, assignors to Sybron Corporation, Rochester, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,334
Int. Cl. H05g *1/00*
U.S. Cl. 250—490 **11 Claims**



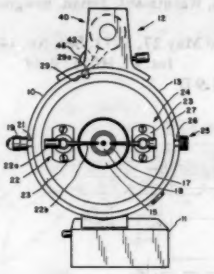
The size of an X-ray beam is automatically adjusted in response to signals produced by a pair of continuously variable transducers, such as rotary potentiometers, mounted on a cassette holder. One of the transducers is preferably adjusted by a pivoted arm on the holder adapted to contact the side of a cassette positioned on the holder. The other transducer is preferably adjusted, through suitable gearing, by a cable connected to one of a pair of jaws which center the cassette on the holder. The preferred embodiment also has a switch and means to open the switch when there is no cassette on the holder in order to prevent the X-ray generator from being activated.

3,764,809

X-RAY POWDER CAMERA HAVING AN EXTERNAL FILM MAGAZINE ASSEMBLY AND DRIVE MEANS

David J. Haas, Stamford, Conn., assignor to Pepi, Inc., New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,287
Int. Cl. G01n *23/04, 23/20*; G03b *41/16*
U.S. Cl. 250—469 **10 Claims**



A powder camera for x-ray diffraction analysis of powder and crystal specimens, comprises a sealable housing that receives a strip of flim around its inner circumference for exposure by an x-ray beam reflected off a specimen therein. Film is preloaded into a cassette which is inserted into a film magazine holder on the camera, the film strip being advanced from the cassette for exposure, and subsequently rewound onto the cassette which is removed.

3,764,810

SENSITIVITY SCINTILLATION CRYSTAL AND METHOD THEREFOR

Abraham Taylor, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1970, Ser. No. 100,681
Int. Cl. G01t *1/20*
U.S. Cl. 250—473 **4 Claims**

A method of increasing the sensitivity of a scintillation crystal and improved sensitivity crystal to uranium K radiation wherein thorium, for example, is added to the scintillation crystal to increase the scintillation yield thereof by producing thorium characteristic radiation and increasing production of photoelectrons in response to the absorption of a portion of the uranium K radiation applied thereto.

3,764,811

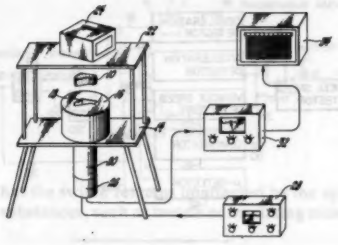
METHOD OF TESTING FOR LEAKS IN LOW DENSITY ARTICLES

Walter H. Lange, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 4, 1972, Ser. No. 250,149
Int. Cl. G01n *23/00*
U.S. Cl. 250—302 **3 Claims**

Plastic foam carburetor floats are inspected for leaks by subjecting the floats to a radiopaque solution (e.g., zinc chloride), under pressure to impregnate those floats having leaks, then irradiating each float with gamma rays from an

Americium 241 source and detecting the intensity of the transmitted radiation by a scintillation detector or Geiger



counter. Those floats having leaks transmit a detectably smaller amount of radiation than good floats.

3,764,812

ADDRESS SELECTION SYSTEM

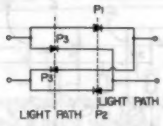
Zenichi Kiyasu and Tsutomu Nakamura, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 211,914

Claims priority, application Japan, Dec. 28, 1970, 45/119449

Int. Cl. H01J *31/50*

U.S. Cl. 250—213 A **11 Claims**



An address selection system for a memory units, of a plurality of address circuits, the number of which corresponds to the number of addresses in a memory unit, have a plurality of networks, each of which has a plurality of photo-electromotive conversion elements. A light pattern illuminates said photo-electromotive conversion elements, such that one of said address circuits responds and provides output voltage higher than that of those unselected. The present invention can be performed without transformers, and provides a highly reliable, miniaturized, memory system with integrated circuits.

3,764,813

COORDINATE DETECTION SYSTEM

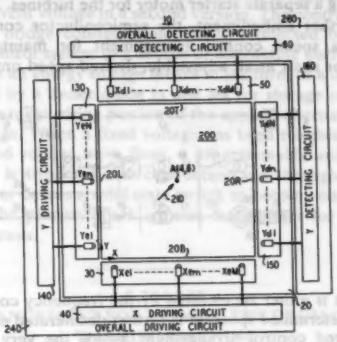
Frank John Clement, Aurora, Colo., and Barton Leigh Richardson, Matawan, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 12, 1972, Ser. No. 243,256

Int. Cl. H01J *39/12*

U.S. Cl. 250—221 R **11 Claims**

In a coordinate detection system, the interruption of pulsed invisible light beams is used to determine the spatial coordinates of a passive stylus, such as a finger or a pencil, relative to an associated display. The system comprises a rectangular frame which houses two mutually perpendicular linear arrays of infrared light-emitting diodes and two perpendicular linear arrays of associated silicon detector diodes. Driving circuitry sequentially pulses the light emitters in repeating cycles. Associated detecting circuitry responds to the detectors and determines during each cycle the spatial coordinates of the interfering stylus. This spatial information is then coded and transmitted, if necessary. Sequential pulsing eliminates the need for beam collimating structures and lenses and allows



for the application of high instantaneous power driving levels to the emitters.

3,764,814

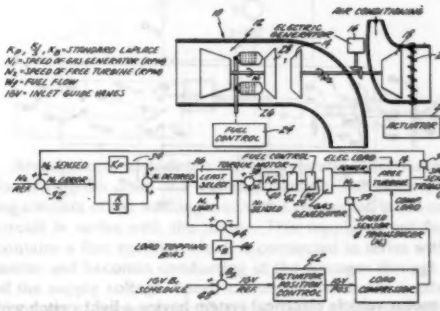
CONTROL FOR AUXILIARY POWER UNIT

James J. Griffith, East Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 27, 1972, Ser. No. 238,214

Int. Cl. H02p *9/04*

U.S. Cl. 290—40 **8 Claims**



A control for a free turbine type of power plant utilized as an auxiliary power unit for aircraft generating electricity, supplying pneumatics and/or hydraulic pressure, maintains turbine speed at a constant value by modulaing engine power and compressor load independently of each other.

3,764,815

START-UP CONVERTER

Adolf Habock, Erlangen, and Kurt Fork, Frauenaurach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 3, 1972, Ser. No. 231,543

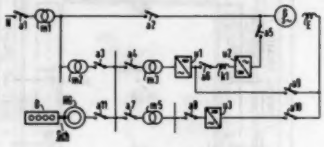
Claims priority, application Germany, Mar. 6, 1971, P 21 10 747.1

Int. Cl. F01d *15/10*; F02n *11/00*

U.S. Cl. 290—52 **23 Claims**

Apparatus for starting up the turbine of a gas turbine unit or a pump storage unit having a generator coupled to the turbine, which includes a frequency converter of variable output frequency which connects a supply voltage to the generator during start-up. The generator is accelerated by the frequency

converter as a synchronous motor until a predetermined speed is reached. The frequency converter is a static semiconductor converter. The starting-up apparatus eliminates the need for providing a separate starter motor for the turbines. According to a further embodiment, the semiconductor converter includes a speed control arrangement for maintaining the generator shaft at an adjustable, desired speed until the turbine unit is either accelerated by the frequency converter to the predetermined speed or is further decelerated or stopped. The speed control arrangement avoids the very rapid accelerations and decelerations of the turbine shaft otherwise accompanying start-up and shut down, thereby preventing distortions in the turbine shaft caused by non-uniform heating and cooling.



3,764,816

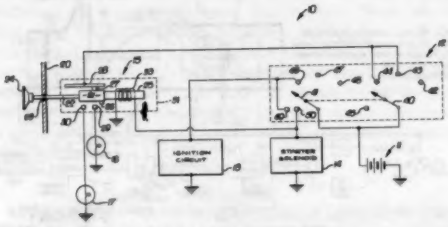
VEHICLE LIGHT-IGNITION SWITCHING ARRANGEMENT

Robert I. Johnson, 5317 E. Florence Ave., Bell, Calif.

Filed June 26, 1972, Ser. No. 266,297

Int. Cl. B60q *1/26*

U.S. Cl. 307—10 LS **6 Claims**



A motor vehicle electrical system having a light switch with off and on positions includes a solenoid associated with the light switch. The solenoid is connected to a start contact of an ignition switch to be energized when the vehicle is started and the solenoid is operable when energized to actuate the light switch to its off position. The ignition switch is arranged to break the circuit between the light switch and the battery of the vehicle when the ignition switch is switched to its start position.

3,764,817

VEHICLE SPEED DETECTOR FOR USE WITH SKID CONTROL SYSTEMS

Hiromichi Nakamura, and Kosaku Baba, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

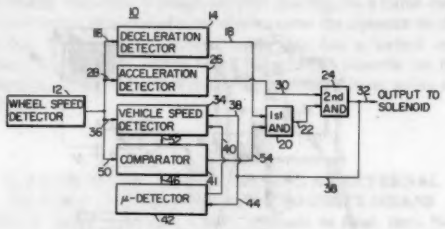
Filed Nov. 9, 1971, Ser. No. 197,042

Claims priority, application Japan, Nov. 16, 1970, 45/100429

Int. Cl. B60t *8/06*

U.S. Cl. 307—10 R **5 Claims**

A vehicle speed detector for use with a skid control system which comprises a capacitor to be charged by the wheel speed signal and a constant-current discharging circuit for discharging the capacitor by flowing therethrough a constant-current as long as the solenoid valve is de-energized. The voltage across the terminals of the capacitor is utilized as the output vehicle speed signal of the detector.



3,764,818

SWITCHING CIRCUIT

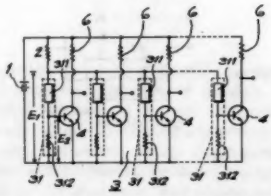
Noboru Masuda, Saitama, and Masasi Kuroyanagi, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1971, Ser. No. 196,923

Claims priority, application Japan, Nov. 9, 1970, 45/98525

Int. Cl. H03k *1/00*

U.S. Cl. 307—296 **9 Claims**



A switching circuit compensating the bias potential of a switching element by automatically varying the value of the current supplied by a current control means to a matrix, comprising a bias resistor circuit formed by series connecting a semiconductor device having a resistance effect and a fixed resistor, a impedance matrix formed by connecting in parallel said bias resistor circuit to a power supply, a control means interpositioned between the impedance matrix and the power supply, and a switching element provided in each bias resistor circuit of said impedance matrix wherein a control electrode is connected between said semiconductor device and fixed resistor.

3,764,819

ELECTRONIC SWITCH ACTUATED BY PROXIMITY OF THE HUMAN BODY

Harro Muller, Osterhofener Str. 15, Konigsdorf/Obb, Germany

Filed Mar. 15, 1972, Ser. No. 234,952

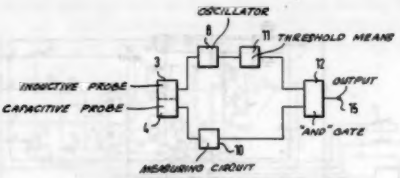
Claims priority, application Germany, Mar. 16, 1971, P 21 12 521.3

Int. Cl. H01h *35/00*

U.S. Cl. 307—116 **13 Claims**

An improved contact-less electronic switch, adapted to be actuated by the approach of a human hand, with a capacitive probe insulated against the chassis and installed in the zone of approach, and connected to a capacitance detecting circuit

which delivers a switching signal when the capacitance is increased by the approach of a hand, wherein the improvement



comprises that the switch remains unaffected by the approach of all other substances, such as metals or insulating materials.

3,764,820

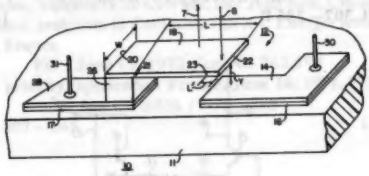
DIGITAL ACCELEROMETER

Marvin H. White, Laurel, Md.; Richard G. Hamel, Margate, Fla., and David D. O'Sullivan, Bethesda, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 80,394, Oct. 13, 1970. This application Sept. 29, 1971, Ser. No. 184,673

Int. Cl. H01h *35/00*

U.S. Cl. 307—121 **11 Claims**



A threshold accelerator switch is mounted on an object to indicate when the object is being subjected to a predetermined acceleration. The emitter and base terminals of a transistor are connected across the switch contacts. When the object is subjected to a predetermined acceleration, the switch contacts close causing the base electrode of the transistor to be shorted out, thus turning off the transistor. A plurality of switches and transistors can be mounted on a single object in order to measure the acceleration profile of the object.

3,764,821

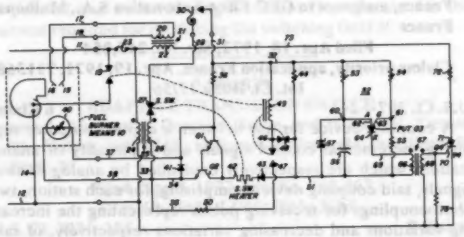
BRIDGE OPERATED LATE-PHASE FIRING CIRCUIT MEANS FOR FUEL BURNERS

Roelof F. Jacobsz, 11010 Quincy Blvd. N.E., Blaine, Minn.

Division of Ser. No. 105,396, Jan. 11, 1971, abandoned. This application May 17, 1972, Ser. No. 254,116

Int. Cl. H01h *7/16*

U.S. Cl. 307—139 **5 Claims**



A control system is provided for energizing an electrical load, in the form of a spark ignition transformer, so that the load is energized for a portion of each cycle of the applied alternating current in a first version, whereas, the load can be energized for a portion of each half cycle of the applied alternating current voltage in a second version. The control circuit utilizes a bridge configuration that is connected by a fuel burner control system to a source of alternating current. The bridge has an energy storage means in the form of a capacitor paralleled by a Zener diode in one leg for storage of energy during the initial rising portion of the applied alternating current voltage. When a fixed voltage has been reached, late in the applied voltage wave form, a programmable unijunction transistor is triggered into conduction and through a pulse transformer causes a solid state switch to become conductive through the primary spark ignition transformer for the fuel burner system.

3,764,822

ARRANGEMENT FOR DRIVING THE DRUM OF A WASHING MACHINE

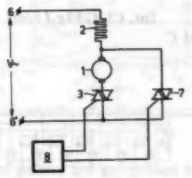
Willem Ebbinge, and Dirk Cornelis De Ruiter, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 29, 1972, Ser. No. 267,363

Claims priority, application Netherlands, July 3, 1971, 7109226

Int. Cl. H01h *7/00*

U.S. Cl. 307—141 **10 Claims**



Arrangement including a self-commutating electric motor for driving the drum of a washing machine. The electric heating element of the washing machine is connected in the supply circuit in series with the motor. This supply circuit further contains a first rectifier which is connected in series with the motor and becomes conducting at the passages through zero of the supply voltage. Speed control of the motor is effected by means of a second rectifier which is of a bidirectional type and which shunts the series combination of the motor and the first rectifier and is set to the conductive condition by means of control pulses. The power dissipated by the heating element may also be regulated by means of this second rectifier.

3,764,823

TIMED TRUE AND COMPLEMENT GENERATOR

Nicholas M. Donofrio; Douglas W. Kemerer, both of Essex Junction, Vt., and John Raymond, Jr., Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

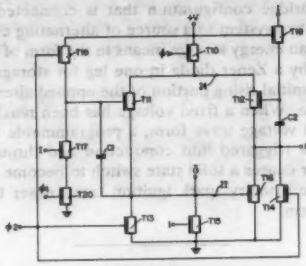
Filed Dec. 29, 1972, Ser. No. 319,435

Int. Cl. H03k *19/08*

U.S. Cl. 307—205 **6 Claims**

Disclosed is a true complement generator for providing the true and complement values of an input signal as an output, in response to predetermined timing signals. A first portion of the true complement generator is a gated inverter circuit generating a complement output. A second portion of the true complement generator is a gated driver circuit generating a true output. The true and complement phases of the input

signal appear at the respective output nodes during the occurrence of a first timing signal, while both output nodes are held



to the same level during the occurrence of a second timing signal.

3,764,824

SHIFT REGISTER

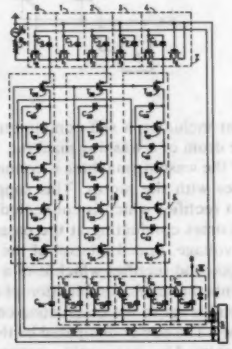
Frederick Leonard Johan Sangster, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,104

Claims priority, application Netherlands, Sept. 16, 1971, 7112720

Int. Cl. G11c *11/40*

U.S. Cl. 307—221 C **9 Claims**



The invention relates to a shift register which has a first and a second delay circuit. The analogue signal to be delayed is applied to the first delay circuit, and the delayed signal is taken from the second delay circuit. Parallel auxiliary delay circuits are connected between the said two delay circuits. The shift rate of the auxiliary delay circuit is lower than the shift rate of the first and second delay circuits.

3,764,825

ACTIVE ELEMENT MEMORY

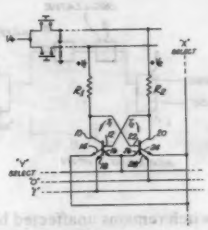
Richard F. Stewart, 13027 Sky Valley Rd., Los Angeles, Calif.

Filed Jan. 10, 1972, Ser. No. 216,511

Int. Cl. H03k *17/22, 3/286*; G11c *11/40*

U.S. Cl. 307—238 **7 Claims**

Bistable memory elements having a pair of active transistor components are provided with separate voltage supply lines. The collector and/or emitter circuits of each transistor pair are selectively connected to different ones of the voltage supply lines, which are actuated in sequence to set each memory element into a predetermined initial state, thus combining the advantages of read-only operation with random access capabilities.



3,764,826

TRANSISTOR CIRCUIT FOR COLOR TELEVISION RECEIVER

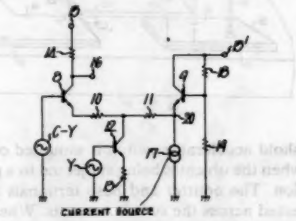
Takashi Okada, Kawasaki-shi, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 89,159, Nov. 13, 1970, abandoned. This application Aug. 19, 1971, Ser. No. 173,221

Claims priority, application Japan, Nov. 15, 1969, 44/91529

Int. Cl. H03k *5/20*; H04n *9/52*

U.S. Cl. 307—235 R **14 Claims**



A transistor matrix circuit for a color television receiver which receives a luminance signal, and color difference signals, and provides color signals. The circuit is of a novel design using only transistors of one type thereby permitting the manufacture of the circuit in integrated circuit form. The circuit also includes adjustable circuit elements for independent control of the levels of each color signal and in which only the saturation degrees of the color signals are adjusted without changing their hues.

3,764,827

COUPLING DEVICE BETWEEN A DIGITAL COMPUTER AND AN ANALOGICALLY CONTROLLED INSTALLATION

Regis Pecheyran, Paris, and Emile Fauvet, Champigny, both of France, assignors to GEC Elliot Automation S.A., Mulhouse, France

Filed Apr. 18, 1972, Ser. No. 245,054

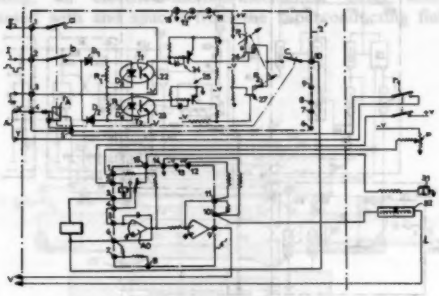
Claims priority, application France, Apr. 19, 1971, 7113687

Int. Cl. H03k *17/56*

U.S. Cl. 307—241 **6 Claims**

A coupling device for use between a digital computer supplying incremental control signals and a plurality of analog stations which are respectively controlled by analog control signals, said coupling device comprising, for each station, two photocouplings for receiving pulses representing the increasing variations and decreasing variations respectively, of said incremental control signals, and an integrator for receiving the outputs of said photocouplings to supply the corresponding analog quantities to the analog stations, the photocouplings

being adapted to ensure a galvanic isolation between the analog stations themselves on the one hand and the analog sta-



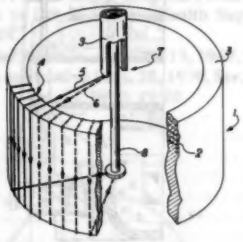
tions in relation to the coupling on the other hand, while allowing a very short coupling occupation time.

3,764,828

SWITCH FOR A SUPERCONDUCTING CIRCUIT

Hubert Croso, Ris-Orangis; Gerard Prost, Fresnes; Andre Queffelec, Villeneuve St-Georges, and Jean Sole, Clamart, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed June 13, 1972, Ser. No. 262,197
Claims priority, application France, June 16, 1971, 7121821
Int. Cl. H03k *17/78, 3/38*
U.S. Cl. 307—245 1 Claim



A superconducting wire arranged in parallel horizontal layers of adjacent turns so as to form a toroidal winding is surrounded by an external switching winding, the consecutive turns of which extend in planes substantially at right angles to the planes of the superconducting winding. The external winding is constituted by a series of elemental windings n mounted in parallel and each carrying a current I/n, wherein I is the current required for producing the switching field H.

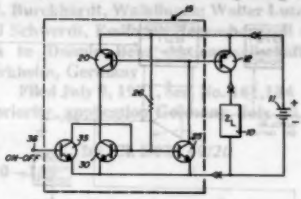
3,764,829

ADAPTIVE TRANSISTOR SWITCH

James A. McDonald, Downers Grove, and William R. Ziemer, Des Plaines, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed June 9, 1972, Ser. No. 261,463
Int. Cl. H03k *17/60;* H03g *3/30*
U.S. Cl. 307—255 8 Claims

A transistor connected to a variable load and a suitable source of power to control the current through the load in response to current applied to the base of the transistor and means connected to the base of the transistor for sensing changes in current through said transistor and adjusting the



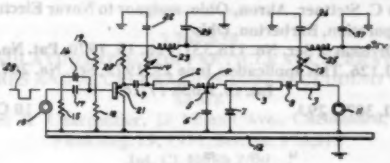
base current to maintain the transistor operating at a predetermined saturation point or forced beta.

3,764,830

STRIPLINE VIDEO PULSE GENERATOR

William E. Blore; Srbislav Zivanovic, both of Goleta Calif., and Bernard Charest, Ste-Foy, Quebec, Canada, assignors to the United States of America as represented by the Secretary of the Air Force

Filed June 27, 1972, Ser. No. 266,816
Int. Cl. H03k *5/00, 3/26*
U.S. Cl. 307—260 3 Claims



Nanosecond video pulses are generated by a pulse forming network comprising input and output stripline sections connected by a drive inductance, a capacitor connected to ground and to the inductance by a variable tap, a potentiometer connected between the input stripline section and ground, and a step recovery diode connected between the output stripline section and ground. Input pulses fed through the drive inductance provide almost constant current drive to the step recovery diode. When the step recovery diode snaps, the step wavefront travels in both directions along the stripline. The reverse traveling wave is reflected at the AC short circuit produced by the capacitor. Pulse width is controlled by the location of the tap on the drive inductance. Pulse delay is controlled by the forward bias current through the step recovery diode by means of the potentiometer.

3,764,831

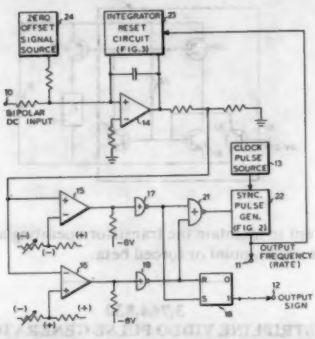
BIDIRECTIONAL VCO FOR A CLOSED LOOP POSITION MEASURING SYSTEM

Thomas M. Zwitter, Newbury, and Ronnie G. Walters, Mayfield Heights, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Nov. 1, 1971, Ser. No. 194,426
Int. Cl. H03k *1/16*
U.S. Cl. 307—271 10 Claims

A bidirectional voltage controlled oscillator for a closed loop position measuring system in a numerical control servomechnism, and for other similar systems, comprised of means for integrating a DC input signal to produce a ramp signal with a slope proportional to the amplitude of the input signal and a polarity related to that of the input signal. A pair of comparators determines when the output of the integrator exceeds a predetermined threshold level of either polarity, and in response thereto activates both means for transmitting

a single pulse when that level is exceeded and means for storing the polarity of the integrator output signal at that time until a new determination is made. The transmitted pulse resets the integrating means to start another pulse generating



cycle. In the event of integrator saturation, further means responsive to the outputs of the comparators enables system clock pulses to be transmitted for a maximum output pulse rate.

3,764,832

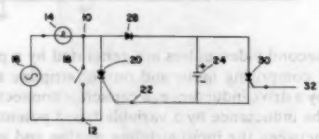
ELECTRONIC SWITCH FOR TIMED LOAD ENERGIZATION AFTER TRIGGER SIGNAL

Joseph C. Stettner, Akron, Ohio, assignor to Novar Electronics Corporation, Barberton, Ohio

Division of Ser. No. 116,331, Feb. 18, 1970, Pat. No. 3,713,126. This application June 29, 1972, Ser. No. 267,505

Int. Cl. H03k *17/26*

U.S. Cl. 307—293 10 Claims



A burglar deterrent having a timing switch connected to the lights of a room or building for actuating these lights for a selected period of time in response to a sound made by an intruder. The timing switch has an SCR connected to the switch terminals. The gate of the SCR is connected to a timing circuit which comprises a series connected capacitance and diode connected from the gate to the anode of the SCR. A second SCR has its main terminals connected across the capacitance for, at times, discharging the capacitance in response to a trigger signal at the gate of the second SCR. A zener diode is connected for limiting the charging voltage applied to the capacitance. A variable resistance is connected from the gate of the first SCR to its cathode to permit selection and control of the delay time.

3,764,833

MONOLITHIC MEMORY SYSTEM WITH BI-LEVEL POWERING FOR REDUCED POWER CONSUMPTION

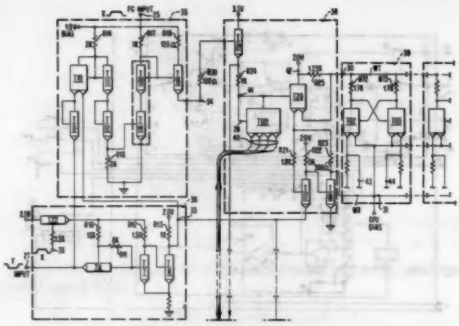
John K. Ayling, Fishkill, and Richard D. Moore, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 74,432, Sept. 22, 1970, Pat. No. 3,688,280. This application May 22, 1972, Ser. No. 255,897

Int. Cl. H03k *1/02*

U.S. Cl. 307—296 A 2 Claims

An intermittently powered true-complement generator circuit which comprises means for intermittently applying power to said circuit and generator means for receiving a single binary signal bit input prior to the application of said power and for providing a two terminal true-complement output representative of said input only when said power is applied,



said generator means providing an output in the up binary state on each of the two output terminals during periods after said signal bit is received and before power is applied.

3,764,834

ELECTROMAGNETIC VIBRATOR

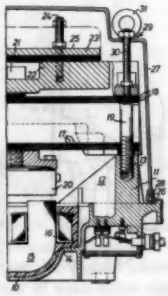
Leo Brosch, Stetten; Gerd Fechner, Goppingen, and Eduard Reichert, Kirchheim-Otlingen, all of Germany, assignors to Transformation Union Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany

Filed Oct. 14, 1971, Ser. No. 189,233

Claims priority, application Germany, Oct. 15, 1970, P 20 50 647.2

Int. Cl. H02k *33/02*

U.S. Cl. 310—17 8 Claims



An electromagnetic vibrator in the form of a dual mass vibratory system. The vibrator includes a first mass in the form of a base having a central recess and including at least two extensions extending substantially parallel to the vibration axis of the vibrator. A magnetic system is positioned within the recess. The vibrator includes further at least one leaf spring packet and rigid thread means associated with the extensions for fastening ends of the at least one leaf spring packet. Means are provided for rigidly coupling the central portion of the at least one leaf spring packet to a second mass.

3,764,835

DOUBLE SHIELDED SUPERCONDUCTING FIELD WINDING

David Lee Luck, Chesapeake, Va., and Philip Thullen, Dover, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

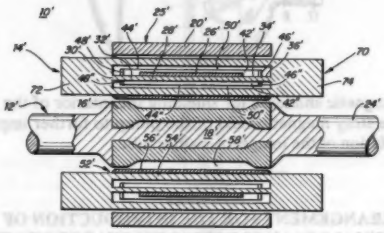
Filed May 25, 1972, Ser. No. 256,802

Int. Cl. H02k *9/00*

U.S. Cl. 310—52 2 Claims

In a cryogenic electrical machine having a superconducting field winding mounted on a field structure and an armature

mounted on an armature structure, the armature and the field structure carried one by the rotor, the other by the stator of the machine and an inner thermal radiation shield surrounding, mounted with and spaced from the superconducting field winding, an electrical-thermal-mechanical outer shield mounted with and spaced from the superconducting field



winding and located between the superconducting field winding and the armature, the outer shield being at least co-extensive axially with the superconducting field winding and circumferentially continuous between the superconducting field winding and the armature and disposed in an ambient temperature region of the machine.

3,764,836

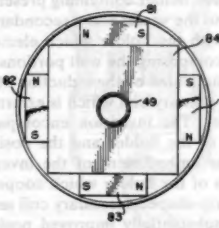
FERMENTER HAVING A MAGNETICALLY DRIVEN AGITATOR

Charles E. Bender, and Douglas S. Fraser, both of New Paltz, N.Y., assignors to Cenco Medical/Health Supply Corporation, Chicago, Ill.

Division of Ser. No. 676,419, Oct. 19, 1967, Pat. No. 3,580,812. This application Sept. 28, 1970, Ser. No. 76,164

Int. Cl. H02k *49/10*

U.S. Cl. 310—98 5 Claims



A magnetic drive arrangement for fermenters wherein the sample or culture agitated must be maintained free of contamination. The magnetic drive includes a driven plate and a driving plate. The magnets on the driven plate are polygonally arranged with like poles adjacent to maximize field strength, and are mounted in a cup-shaped receptacle, located and held by a simple spacer plate. A cover plate captivates the magnets and is joined to the cup-shaped receptacle to isolate them from the sample agitated. The rotational drive includes a double shaft motor which drives the driving plate at one end through a reduction gear drive, with the other end of the motor shaft directly coupled to a tachometer generator to provide accurate speed readings in the lower speed ranges.

3,764,837

FREQUENCY TRANSMITTER, ESPECIALLY FOR BRAKE SLIPPAGE CONTROL INSTALLATION OF MOTOR VEHICLES

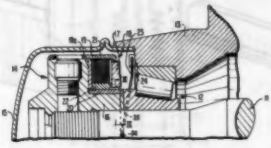
Manfred H. Burckhardt, Waiblingen; Walter Lutze, Esslingen, and Paul Schwerdt, Esslingen-Hegensberg, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-untertuerkheim, Germany

Filed July 9, 1971, Ser. No. 161,184

Claims priority, application Germany, July 10, 1970, P 20 34 280.7

Int. Cl. H02k *19/20*

U.S. Cl. 310—168 29 Claims



A frequency transmitter of high accuracy for the indication of the rotating condition of wheels, especially for brake slippage control installations in motor vehicles, in which a rotating part driven by the wheel cooperates by means of teeth with the poles of a stationary magnetic part which may also be provided with teeth, whereby the rotating part is connected with its drive by an axially elastic cross spring that permits a radial play.

3,764,838

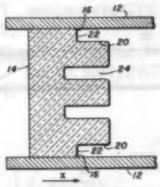
INSULATING RING FOR PARTICLE ACCELERATOR TUBES AND ACCELERATION TUBE INCLUDING THE SAME

Robert R. Charpentier, 21 Miland Ave., Chelmsford, Mass.

Filed Aug. 19, 1971, Ser. No. 173,215

Int. Cl. H05h *7/00*

U.S. Cl. 313—63 2 Claims



An acceleration tube having insulating rings shaped on the inside surface to relieve stress at the line defined by the intersection of the insulator, electrode and evacuated tube interiors and to maintain insulating properties during and after tube sparks. Annular cuts in the insulators at the defined lines have a width to height ratio of approximately 2.5/1.0, the horizontal width falling within the range of 0.225 inch to 0.275 inch, and the vertical height falling within the range of 0.75 inch to 0.125 inch. One or more annular grooves or a spiral groove may be provided between the cuts, with a depth greater than the cut width.

3,764,839

THERMAL RECORDING TUBE

Ikuo Fujimura, Ashigara-Kamigun, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Nov. 22, 1971, Ser. No. 200,679

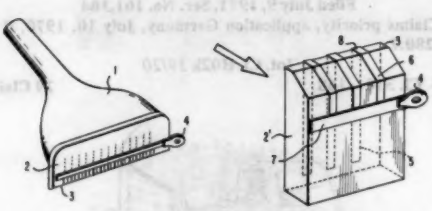
Claims priority, application Japan, Dec. 23, 1970, 45/124282

Int. Cl. H01j *31/58*

U.S. Cl. 313—73 3 Claims

A plurality of belt conductors are arranged on the inner side of the face plate of a cathode ray tube, and a plurality of belt

conductors are arranged on the outer side thereof. At the edge portion of the face plate which contacts a heat-sensitive paper, heat-radiative resistors are provided to connect both belt conductors. An earth terminal is connected with all of the belt conductors on the outer side of the face plate. The heat-radiative resistor radiates heat by electric current supplied from an electron beam through the inside belt conductor so as to enable the recording on the heat-sensitive paper in contact therewith. Belt conductors may be manufactured by forming a resistive coating of e.g., SiO_2 on a glass face plate and then by cutting to form a plurality of belts with a diamond cutter.



3,764,840

FLUORESCENT LAMP PROVIDING VISIBLE LIGHT AND DORNO RAYS

Hirofumi Shiraishi, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 34,848, May 5, 1970, abandoned. This application June 2, 1972, Ser. No. 259,180

Claims priority, application Japan, May 8, 1969, 44/34809

Int. Cl. H01j *61/30, 61/44*

U.S. Cl. 313—109 **6 Claims**

The fluorescent lamp comprises a bulb and a layer consisting of a first fluorescent substance having the principal luminous spectrum in the visible ray region and a second fluorescent substance having the principal luminous spectrum in the Dorno ray range. The proportion of the first and second fluorescent substances is selected to radiate visible light fluxes and Dorno ray fluxes at a ratio substantially equal to that of the natural day light. The bulb has a thickness about 0.8mm and is composed of a soda-lime glass which does not transmit radiations of the wave length less than 295nm.

3,764,841

MAGNETIC SHIELDING FOR EVACUATED TUBE COMPRISING PLURAL COATING OF BINDER AND MAGNETIC PARTICLES

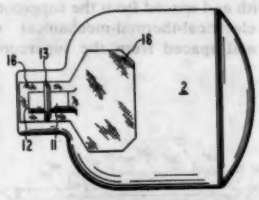
Warren P. Coon, 3126 McKinley Dr., Santa Clara, Calif.

Filed Aug. 16, 1971, Ser. No. 171,892

Int. Cl. H01l *29/06*

U.S. Cl. 313—153 **3 Claims**

An x-ray image intensifier tube is evacuated by means of an appendage magnetically confined glow discharge getter-ion vacuum pump. A shell of soft iron is disposed surrounding the magnet of the appendage pump for shielding the image intensifier tube from the stray magnetic field of the appendage pump. A coating of magnetic material on the envelope of the intensifier tube, in the region facing the pump, provides additional magnetic shielding for shielding the interior of the tube from the stray magnetic field of the pump to further improve the resolution of the image intensifier tube.



3,764,842

ARRANGEMENT FOR THE INTRODUCTION OF MATERIALS IN AN ELECTRIC DISCHARGE VESSEL

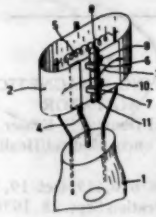
Johannes Antonius Maria Ridders; Adrianus Josephus Theresia Mollet, and Arend Jan Termeulen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1971, Ser. No. 205,628

Claims priority, application Netherlands, Dec. 25, 1970, 7018831

Int. Cl. H01j *61/28*

U.S. Cl. 313—177 **4 Claims**



An improvement in an arrangement for the introduction of materials into a closed electric discharge vessel. The arrangement includes a closed holder containing preselected material to be introduced into the vessel and a secondary coil element placed in contact with the holder which element includes a heating wire for decomposing the wall portions of the holder. The heating wire is activated by the induction of current in the secondary coil by a primary coil which is external to the electric discharge vessel. The invention encompasses improvement in the shape of the holder and the positioning of the holder. A particular embodiment of the invention involves constricted portions of the holder which cooperate with lugs extending from a strip-shaped secondary coil section. This arrangement effects substantially improved positioning of the holder after the materials within the holder are released into the vessel.

3,764,843

HIGH-PRESSURE GAS DISCHARGE LAMP CONTAINING GERMANIUM AND SELENIUM

Antonie Peter Lambertus Van Eijl; Alexander Gray Jack, and Harry Nienhuis, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1972, Ser. No. 256,578

Claims priority, application Netherlands, June 2, 1971, 7107535

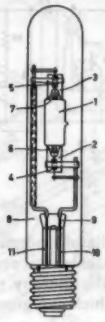
Int. Cl. H01j *61/12*

U.S. Cl. 313—184 **8 Claims**

A high-pressure gas discharge lamp provided with a gas filling which comprises at least 10^{-7} gram atoms of germanium

ASSIGNEE: VARIAN

per cubic cm of the discharge vessel and selenium. The selenium-germanium ratio has a value of between 0.5 and 4. Furthermore the gas filling may comprise tin and a halogen in which the selenium-halogen ratio is chosen between 0.02 and



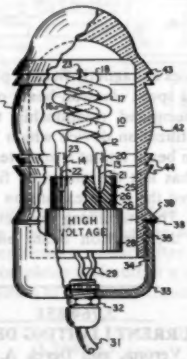
4. In addition to the said elements the lamp preferably includes a starter gas (rare gas) and a buffer gas (mercury). The lamp emits the continuous molecular radiation of germanium selenide and a very satisfactory colour rendition is possible in a wide range of colour temperature.

3,764,844

GAS DISCHARGE LAMP AND METHOD FOR MAKING SAME

Alfred I. Schmidt, 6343 Camellia Ave., North Hollywood, Calif.

Filed Apr. 28, 1972, Ser. No. 248,505
Int. Cl. H01g *61/30*
U.S. Cl. 313—220 **10 Claims**



A gas discharge lamp has a glass tube which constitutes a first helix extending in the manner of a multi-turn screw thread from a first end portion, and a second helix encompassing the first helix. The second helix is interconnected with the first helix and extends in the manner of a multi-turn screw thread to a second end portion of the glass tube. Lamp electrodes are located in the mentioned first and second end portions. A gas filling is contained in the glass tube to provide the requisite gas discharge for emiting light from the lamp.

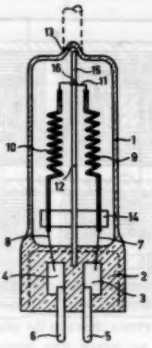
The lamp may include a hollow-cylindrical echelon lens encompassing the first and second helices. This lens may have an annular oblate-spheroidal central portion encompassing the first and second helices.

3,764,845

ELECTRIC FILAMENT LAMP

Dirk Jules Remi De Fraeye, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,219
Claims priority, application Netherlands, May 19, 1971, 7106852
Int. Cl. H01j *1/90, 19/46, 19/48*
U.S. Cl. 313—272 **4 Claims**



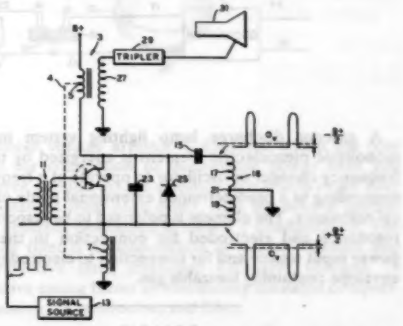
The invention relates to an electric filament lamp having a tubular lamp envelope provided with a pinch seal in which two series-arranged filaments are incorporated which are coupled by a brace. The brace comprises a loop in which a supporting wire is inserted. The shape of the loop and the cross-section of the brace are non-circular, for example, elongate, so as to limit the mutual rotatability.

3,764,846

HORIZONTAL OUTPUT CIRCUITRY FOR CATHODE RAY TUBE SYSTEM

Robert Dwight Gantt, Batavia, and Dong Woo Rhee, Williamsville, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,123
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **9 Claims**



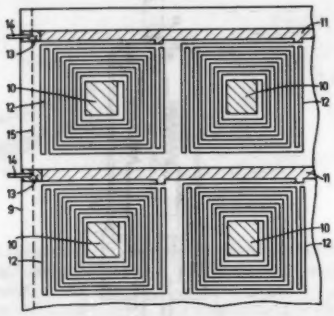
A horizontal output circuit for a cathode ray tube system includes a transformer with a split primary winding having first and second portions coupled to a potential source and potential reference level respectively and interconnected by an electron device shunted by a series connected charge storage means and a horizontal deflection yoke with the yoke having first and second series connected windings and a junction therebetween coupled to the potential reference level whereby substantially equal potentials of opposite polarity are developed across the first and second windings of the yoke.

3,764,847

GLOW-DISCHARGE DISPLAY DEVICE

James Smith, Salfords, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 267,141
Claims priority, application Great Britain, July 22, 1971, 34,369/71
Int. Cl. H01j 7/44
U.S. Cl. 315—52 7 Claims



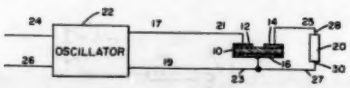
Electrical glow-discharge display device with an array of glow-discharge paths and a cross-bar addressing system therefore. Each anode of a row is, through an electrically resistive connection, connected to a common row supply conductor. The anodes, the electrically resistive connections and the row supply conductors are formed by thin films on a face plate of the device. An insulating layer covers the thin films with the exception of breaks at each anode film.

3,764,848

PIEZOELECTRIC STARTER AND BALLAST FOR GASEOUS DISCHARGE LAMPS

Don A. Berlincourt, Chagrin Falls, Ohio, assignor to Venitron Corporation, Great Neck, N.Y.

application Mar. 15, 1972, Ser. No. 236,534
Int. Cl. H01j 19/78
U.S. Cl. 315—55 6 Claims



A gaseous discharge lamp lighting system in which a monolithic piezoelectric element is energized by means of a frequency changer or oscillator to operate at a frequency corresponding to a predetermined extensional mode of mechanical resonance. The element is polarized to be responsive to the resonance and electroded for connection to the aforesaid power input source and for connection to electrodes of a lamp envelope containing ionizable gas.

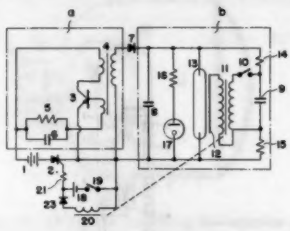
3,764,849

ELECTRONIC FLASH CHARGING AND TRIGGERING CIRCUITRY

Yoshiharu Ohta, Kawanishi, Japan, assignor to Minolta Camera, Kabushiki Kaisha, Minami-ku, Osaka, Japan

Continuation of Ser. No. 30,828, April 22, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,806
Int. Cl. H05b 37/00
U.S. Cl. 315—241 P 7 Claims

A charging and triggering circuit for an electronic flash device of the type in which a voltage for triggering the flash is stored by a condenser comprises structure for generating a feedback signal in response to the triggering of the flash tube to actuate an oscillating circuit for charging the condenser



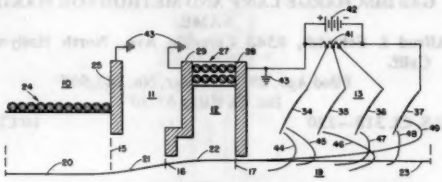
with the rectified oscillatory output. A circuit disables the oscillator when the condenser has reached a voltage sufficient to actuate the flash tube thereby reducing the power consumed from a battery which energizes the circuitry.

3,764,850

ELECTRON BEAM CONTROLLER

Henry G. Kosmahl, Olmsted Falls, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 27, 1972, Ser. No. 266,832
Int. Cl. H01j 23/02
U.S. Cl. 315—5.38 12 Claims



A magnet applies a magnetic field of predetermined intensity and shape to a spent electron beam over an axial distance having a predetermined relationship to the frequency of operation of a utilization device which has extracted energy from the electron beam and at a predetermined axial distance after the beam has left the magnetic field of the utilization device and entered the beam expansion region and beam stabilization region. The stabilizing magnetic field is terminated abruptly before the electron beam enters a collector apparatus.

3,764,851

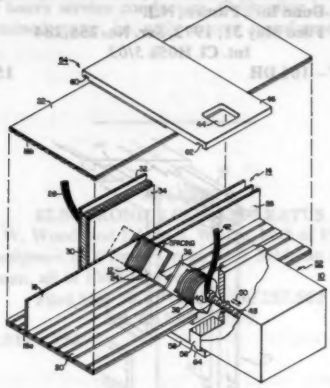
CURRENT LIMITING DEVICE

John M. Hicks, Verona, and Derek A. Paice, Murraysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 13, 1972, Ser. No. 297,525
Int. Cl. H02h 7/22
U.S. Cl. 317—11 C 4 Claims

This disclosure relates to a current limiting device having a first electrical conductor, and a second electrical conductor arranged to be displaced in a path from a fixed position. A plurality of discrete electrical conductors are arranged in tandem, and held in contiguous relationship between the first and second electrical conductors during normal circuit operating conditions. A plurality of chutes, arranged normal to the displacement path, are positioned in proximity to the electrical conductors. A member for displacing the second electrical conductor, moves the second electrical conductor a finite

distance in response to a signal indicative of excessive current flow. When the second electrical conductor is displaced, a



plurality of arcs are produced between successive discrete conductors, the debris products produced during arcing being exited through the chutes.

3,764,852

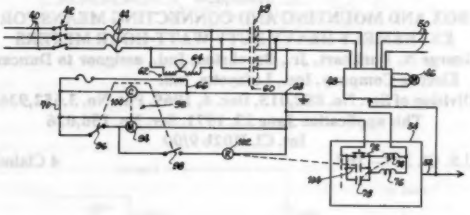
MOTOR CONTROL FOR IRRIGATION APPARATUS

Rich L. Olson, R. R. 1, Box 83, Scottsbluff, Nebr.

Filed June 9, 1972, Ser. No. 261,423

Int. Cl. H02h *7/085*

U.S. Cl. 317—13 A **3 Claims**



To provide for an automatic restart of an irrigation system after a power failure and the motor has stopped a motor driven adjustable timer closes a contact after a preset time interval. The contact completes a circuit in a control panel effective to cause the system to resume operation.

3,764,853

MEANS FOR DUAL LEVEL GROUND FAULT PROTECTION OF A.C. CIRCUITS

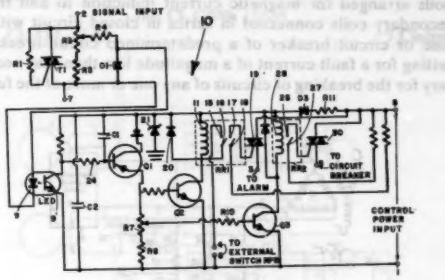
Robert W. Beachley, Jr., P.O. Box 4492, Charlotte, N.C.

Filed Dec. 27, 1971, Ser. No. 212,451

Int. Cl. H02h *3/28*

U.S. Cl. 317—18 D **2 Claims**

Circuitry for detection of ground fault currents in alternating current circuits utilizable with grounded or ungrounded systems and for protectively interrupting the circuits, comprises means for deriving monitoring signals from representative of the fault currents and applying the signals to first and second relays. The first relay is responsive at a low level of fault current to pass control current from a source of control power to warning such as a lamp and horn. The second relay is responsive at a higher level of fault current to pass control current to an interrupter device for the circuits being monitored. Adjustment means in the circuitry sets the two threshold levels of fault current at which the relays respectively respond. Sealin circuit means keep the first relay actuated to activate the alarms continuously after their operation is initiated. A time delay network prevents relay response to instantaneous



transient currents exceeding the lower threshold. The circuitry is unitized for use at any standard voltage, current and frequency and to isolate all current carrying components. The circuits being monitored can serve as a source of control power or an independent source can be provided.

3,764,854

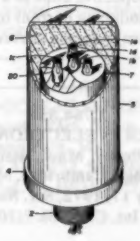
OIL FIELD SECONDARY

Mike Craddock, 1804 Dixie St., Big Spring, Tex.

Continuation of Ser. No. 755,419, Aug. 26, 1968, abandoned. This application May 17, 1971, Ser. No. 143,867

Int. Cl. H02h *1/04*

U.S. Cl. 317—68 **12 Claims**



An excessive voltage arrestor is disclosed which has four conductors for connection to three-phase power lines and ground. Three conductors are disposed in a silicon oxide filler at equal distances from each other, with the neutral ground conductor centrally positioned to form a Y configuration. The silicon oxide filler is nonconductive at normal voltages and highly conductive after ionization excessive voltages. A nonconductive casing forms an electrically insulated compartment containing the conductors and filler.

3,764,855

ZERO-GROUND FAULT-CUTOUT DESENSITIZING DEVICE

Robert W. Beachley, P. O. Box 11281, Charlotte, N.C.

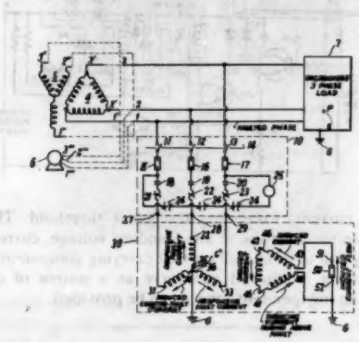
Continuation-in-part of Ser. No. 118,700, Feb. 25, 1971, Pat. No. 3,678,338. This application July 3, 1972, Ser. No. 268,651

Int. Cl. H02h *7/26*

U.S. Cl. 317—18 R **10 Claims**

A device utilizable with any circuit breaking, or fuse-containing, or alarm-embodying circuit for in-effect delaying and

neutralizing the effect of an activation signal which normally would burn out the fuse or break the circuit by activating the circuit breaker or set off the alarm, the primary present embodiment being intended for and utilized with a multi-phase circuit having fuses and/or circuit breakers in each of the leads to the respective multiple phases connected respectively through a plurality of corresponding zero-ground primary coils arranged for magnetic current induction to and from secondary coils connected in series in closed circuit with a fuse or circuit breaker of a predetermined circuit-breaking setting for a fault current of a magnitude less than that necessary for the breaking of circuits of any one or more of the fuses



to the respective leads of the primary coils, the secondary coils being arranged relative to the primary coils such that current flow from the zero point into the respective primary leads is induceable of current flow in series through said series of secondary coils and such that current flow through any one or more of the secondary coils in series is induceable of current flow in the primary coils from the zero point toward respective phase leads, thereby a faulted lead being offset by current being induced in its respective coils as a result of the still functioning primary coils inducing current into the series of secondary coils which in turn induce a current into the faulted primary coils.

3,764,856

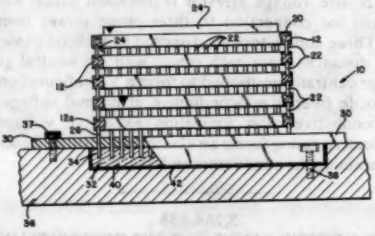
HEAT TRANSFER IN ELECTRONIC EQUIPMENT

Jacob H. Martin, Wellesley, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 17, 1972, Ser. No. 254,114

Int. Cl. H05k 7/20

U.S. Cl. 317—100 **7 Claims**



Heat is conducted from electronic packages or modules by extending the leads of the packages or modules through a mother board, to which the leads are electrically connected, into thermal contact with a thermal sink, and particularly, into an electrically insulating and thermally conducting member (such as a beryllia or alumina block) in thermal contact with the thermal sink.

3,764,857

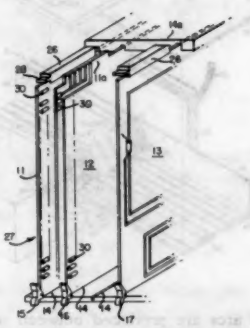
CABINET FOR INTERCHANGEABLE CIRCUIT BOARDS

Peter G. Bartlett; Donald E. Henry, both of Davenport, and Kenton L. Riceman, Bettendorf, all of Iowa, assignors to Struthers-Dunn Inc., Pitman, N.J.

Filed May 31, 1972, Ser. No. 258,284

Int. Cl. H05k 5/03

U.S. Cl. 317—101 DH **15 Claims**



The disclosure relates to a cabinet with replaceable and removable circuit boards. The cabinet is provided with a plurality of circuit boards, each of the circuits being provided with indicating means for identifying the input for and output from the circuit. Means are provided on the interior of the cabinet for aligning the circuit boards as they are inserted into the cabinet and locking them in place to insure correct alignment and contact between the circuit board and its electrical bus connector.

3,764,858

BOX AND MOUNTING AND CONNECTING MEANS FOR EXTREMELY HEAVY DUTY WATT-HOUR METERS

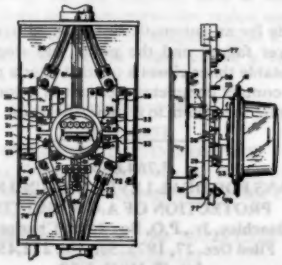
George N. Burkhart, Jr., Brookston, Ind., assignor to Duncan Electric Company, Inc., Lafayette, Ind.

Division of Ser. No. 882,013, Dec. 4, 1969, Pat. No. 3,652,936.

This application June 23, 1971, Ser. No. 156,026

Int. Cl. H02b 9/00

U.S. Cl. 317—107 **4 Claims**



A watt-hour meter has in its base the circular core of a current transformer, wound with the secondary coil, this coil being connected to the current coil of the meter driving unit. The heavy load-carrying conductors extending through this core as its primary winding are carried by the base and are in the form of oppositely facing "U" bars. A special meter box and terminal block facilitates the connecting of this combination in the circuit being measured. Alternatively it may be mounted at a different position, not in the circuit, in which case closing the cover causes the display of words indicating

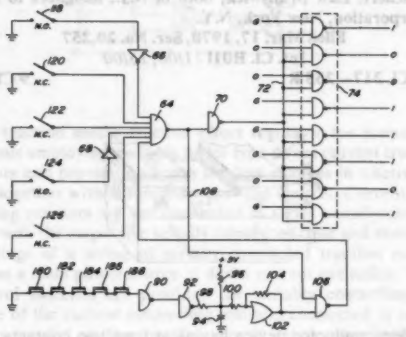
that it is not in service. Shiftable connection links reverse voltage connections in case the supply and load conductors are interchanged from the more usual arrangement, and also facilitate testing. The service connectors are especially suited for very heavy service conductors. Calibration is of the total self-contained meter, i.e. with current transformer as a part thereof.

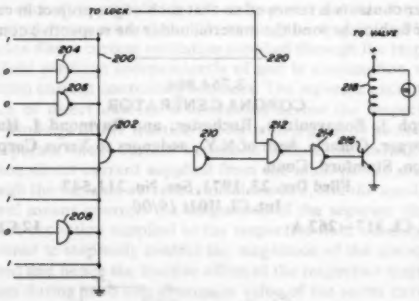
3,764,859

ELECTRONIC LOCK APPARATUS

Charles W. Wood, and Edwin S. Wydro, both of Philadelphia, Pa., assignors to Wilmer Gross, Jack Seidman and Jules I. Whitman, all of Philadelphia, Pa.

Filed May 30, 1972, Ser. No. 257,562
Int. Cl. E05b *49/00*
U.S. Cl. 317—134 12 Claims





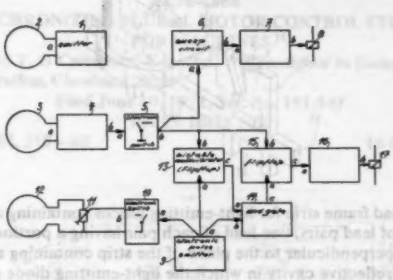
An electronic lock apparatus includes a tumbler key mechanism having tumblers as part of a series of switches for setting a first coded electronic signal in response to the insertion of a key. A second code means connected to the switches generates a second coded electronic signal in response only to receipt of a proper first electronic coded signal, and an electronic means responsive to said second coded electronic signal decodes said second electronic signal and generates an initiating signal to initiate the operation of a lock. The entire electronic lock apparatus is disabled if said series of switches for setting the first coded electronic signal are not set within a predetermined time frame.

3,764,860

METAL DETECTOR AND CHECKING ARRANGEMENT THEREFOR

Gerhard Scheda, Aachen, Germany, assignor to Dr. Hans Boekels & Co., Aachen, Germany

Filed Nov. 29, 1971, Ser. No. 202,790
Claims priority, application Germany, Nov. 30, 1970, P 20 58 754.6
Int. Cl. G08b *13/26*
U.S. Cl. 317—146 7 Claims



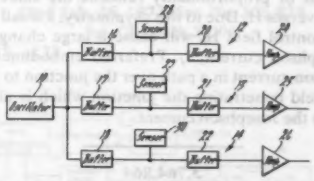
An arrangement for detecting metal articles in a moving stream of nonmetallic material in which an emitter coil establishes a field linking a receiver coil and through which field the material moves so metal objects change the field. Changes in the field generate a signal which operates a signalling device. A checking coil is provided to which pulses are supplied periodically and the field from the checking coil changes the field at the receiver coil. A second signalling device is provided under the joint control of the pulse supply for the checking coil and the signal emitted by the receiver coil and which produces a signal indicating faulty operation whenever a pulse is supplied to the checking coil and no pulse is emitted by the receiver coil.

3,764,861

ELECTRONIC SEAT SENSING SWITCH

Stephen J. Orris, Lincoln Park, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed July 31, 1972, Ser. No. 276,636
Int. Cl. H01h *47/22*
U.S. Cl. 317—146 5 Claims



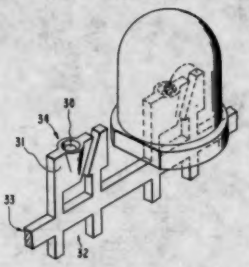
An electronic seat sensing switch placed within the cushion of a motor vehicle seat, senses the presence of an occupant sitting thereon. The sensor responds to the body capacitance of the occupant to electrically "load" the input to a complementary MOS, C/MOS, buffer and thereby blocking an alternating signal from an oscillator from being conducted by the buffer. The oscillator is isolated from the sensor by a second C/MOS buffer allowing a number of parallel switches to be electrically responsive to the output of the generator. The sensor does not affect the operation of the oscillator.

3,764,862

LEAD FRAME FOR LIGHT-EMITTING DIODES

Alfred S. Jankowski, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 19, 1972, Ser. No. 298,908
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 12 Claims



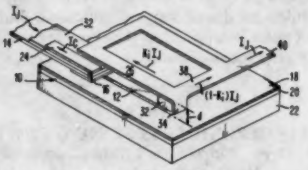
A lead frame strip for light-emitting diodes containing a plurality of lead pairs, one lead of each pair having a portion in a plane perpendicular to the plane of the strip containing an integral reflective cavity in which the light-emitting diode die is mounted.

3,764,863

HIGH GAIN JOSEPHSON DEVICE

Hans H. Zappe, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,315
Int. Cl. H01l 5/06
U.S. Cl. 317—234 R 19 Claims



A high gain Josephson junction device having an asymmetric curve of maximum Josephson current (I_m) versus applied field (H). The magnetic field is proportional to the Josephson current (I_J) through the junction at each instant of time, and the constant of proportionality remains the same for each curve of I_m versus H. Due to this asymmetry, a small change in magnetic control field H_c will cause a large change in maximum Josephson current, I_J. Preferred embodiments return the Josephson current in a path over the junction to produce a magnetic field penetrating the junction which is always proportional to the Josephson current.

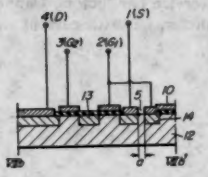
3,764,864

INSULATED-GATE FIELD-EFFECT TRANSISTOR WITH PUNCH-THROUGH EFFECT ELEMENT

Tomisaburo Okumura; Akira Tsuchitani, and Toshio Hasegawa, all of Kyoto, Japan, assignors to Matsushita Electronics Corporation, Kadoma-shi, Osaka, Japan

Filed Mar. 21, 1967, Ser. No. 624,920
Claims priority, application Japan, Mar. 29, 1966, 41/20212
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 12 Claims

An insulated gate field-effect transistor constructed by forming, in a portion of the semiconductor substrate close to the source region, a region which constitutes a p-n junction with the substrate, and by connecting this latter region to the



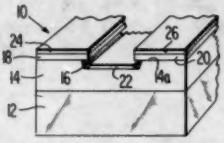
gate electrode, whereby there is caused, between said region and the source, a current due to punch-through at high gate voltage so that the breakdown of the transistor is prevented.

3,764,865

SEMICONDUCTOR DEVICES HAVING CLOSELY SPACED CONTACTS

Louis Sebastian Napoli, Hamilton Square, and Walter Francis Reichert, East Brunswick, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 17, 1970, Ser. No. 20,257
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 9 Claims



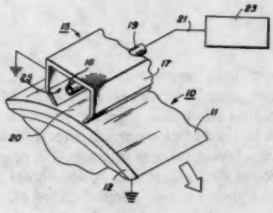
A semiconductor device having at least two contacts on a body of semiconductor material. One of the contacts is in a plane spaced from the plane of the other contacts and the edges of the one contact are in substantial alignment with the adjacent edges of the other contacts. The material under either the edges of the one contact or the adjacent edges of the other contacts is removed so that such edges project in cantilever fashion beyond the material under the respective contact.

3,764,866

CORONA GENERATOR

Joseph J. Bonaventura, Rochester, and Raymond J. Harshbarger, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1971, Ser. No. 211,542
Int. Cl. H01t 19/00
U.S. Cl. 317—262 A 12 Claims



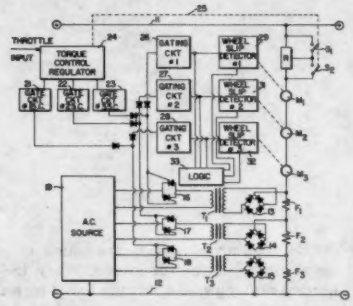
A tungsten wire corona generator having a stable coating thereon for providing the generator with an extremely long life and a stable output.

3,764,867

TRACTION MOTOR SPEED REGULATION FOR PROPULSION SYSTEMS PROVIDING SMOOTH STEPLESS CHANGES IN SPEED AND AUTOMATIC WHEEL SLIP CONTROL

Russell M. Smith, North East, Pa., assignor to General Electric Company, Erie, Pa.

Filed Nov. 14, 1972, Ser. No. 306,411
Int. Cl. H02p 1/16
U.S. Cl. 318—52 22 Claims



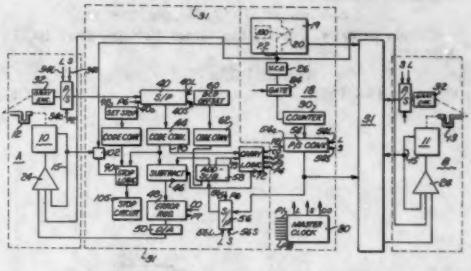
A traction motor tractive effort regulator for propulsion systems employing multiple series type direct current traction motors and providing smooth stepless changes in tractive effort together with automatic wheel slip control. Current controlling resistors are are connected in series circuit relationship with the respective serially connected field and armature windings of a string of serially connected traction motors across a main power source of direct current excitation. Main control switches are provided for variably controlling the value of the current controlling resistors connected in series, series-parallel and/or parallel circuit relationship with the traction motors for variably controlling the torque of the motors and hence the tractive effort of the vehicle. Means are provided for supplying a separate excitation source of direct current connected across the respective field windings of the direct current traction motors in parallel with and in addition to the excitation provided by the main power source. Ancillary control means are included for varying the magnitude of the separate direct current excitation supplied through the respective field windings independently of and in conjunction with the main current controlling resistors. The separate excitation source of direct current is connected across the respective field windings of the traction motor with a polarity such that the separate direct current excitation adds to the normal excitation direct current supplied from the main power source through the variable current control resistor, and the ancillary control means controls the magnitude of the separate direct current excitation supplied to the respective field windings in a manner to steplessly control the magnitude of the armature current and hence the tractive effort of the respective traction motors during each step change in value of the series current controlling resistors whereby smooth, stepless changes in torque of the traction motors can be achieved with the regulator. For this purpose current sensing devices are coupled to the respective traction motors for deriving an output indication of the tractive effort. The output indication of actual tractive effort is compared to an input reference signal in a suitable comparator which derives an output error command signal that controls operation of the ancillary control means. The ancillary control means in turn controls the magnitude of the separate direct current excitation supplied to the respective field windings independently of and complementary with the main current controlling resistors whereby smooth, stepless changes in motor torque are achieved. Additionally, wheel slippage detecting devices are provided for detecting slippage of the respective traction motors and deriving an output indication of such slippage. A wheel slip control circuit is responsive to the wheel slippage detector and is coupled to control the ancillary control means for the slipping traction motor so as to reduce the field current of the slipping motor, and thereby quickly reduce its tractive effort. Simultaneously, the wheel slip control circuit provides an increase in field current to the nonslipping traction motors so as to maintain the tractive effort of each nonslipping motor substantially constant by appropriately decreasing the armature current or at least preventing an increase in the armature current.

3,764,868

SYNCHRONIZING PLURAL MOTOR CONTROL SYSTEM FOR MACHINES

Gerald F. O'Callaghan, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 10, 1971, Ser. No. 151,845
Int. Cl. H02p 5/00
U.S. Cl. 318—85 19 Claims



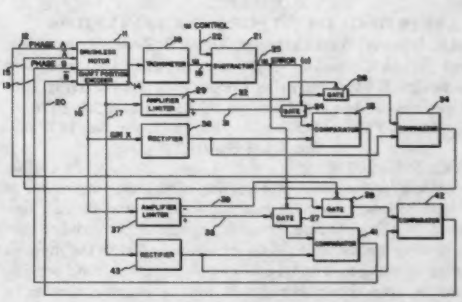
Control circuit for synchronizing machines in which a master velocity signal for controlling speed of machines is also converted to provide a repeating digital master phase cycle which is compared with a digital number from an absolute encoder on each machine for indicating machine position and to develop an error signal to synchronize the machines to the master cycle. Offsetting means is operable to change the phase relationship of the machine to the master cycle and stop means for stopping the machines in a phase relation to the master cycle which is different from the operating phase relationship.

3,764,869

METHOD AND APPARATUS FOR PULSE WIDTH CONTROL FOR BRUSHLESS DC MOTORS

James R. Woodbury, Los Altos, Calif., assignor to Standard Research Institute, Menlo Park, Calif.

Filed Feb. 26, 1973, Ser. No. 335,836
Int. Cl. H02k 29/02
U.S. Cl. 318—138 9 Claims



A method and system for deriving drive pulses for brushless DC motors. Periodic shaft position signals are developed, one

for each of the motor phases. A plurality of pulse width derivation means are provided, one for each of the motor phases. Each pulse width derivation means combines and rectifies the shaft position signals for all the motor phases other than the one phase for which the pulse is being derived to form a rectified signal. In accordance with one embodiment, comparator means are provided for comparing a control signal which can be a speed error signal to the rectified signal to form a drive pulse for the one phase. In other embodiments a periodic function having its period related to the period of the shaft position signals is added to the control signal to form a composite signal which is then compared to the rectified signal to develop drive pulses for the one phase.

3,764,870
CONTROL SYSTEMS FOR BATTERY OPERATED VEHICLES

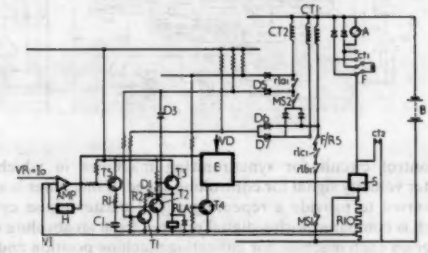
John Morton, Hazel Grove; Keith Drummond Stevens, Marple, and Graham Spencer Thexton, Marple Bridge, all of England, assignors to Cableform Limited, Romiley, Stockport, Cheshire, England

Filed Jan. 20, 1972, Ser. No. 219,313

Claims priority, application Great Britain, Jan. 20, 1971, 2,812/71

Int. Cl. H02p 7/28, 1/04

U.S. Cl. 318—139 **8 Claims**



In some control systems for controlling the supply of electrical energy from a battery to the electric motor of a vehicle it is desirable in certain circumstances to use the maximum available current which may be in excess of that available through a thyristor type D.C. switch. Rather than increase the rating of the D.C. switch to cope with these occasional demands there are provided a by-pass contactor having contacts which, when closed, shunt the D.C. switch, means operable by a speed controller in its maximum speed demand condition included in an enabling circuit of the by-pass contactor and time delay means for delaying the energisation of the by-pass contactor as a function of the motor current.

3,764,871
STARTING CIRCUIT FOR INDUCTION MOTOR

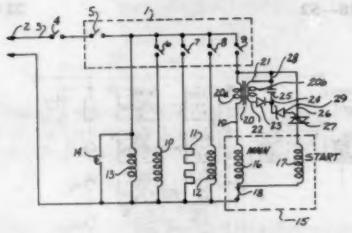
Paul R. Scheuer, West Lafayette; Victor H. Zane, Connersville, and Steven B. Sample, West Lafayette, all of Ind., assignors to Design & Manufacturing Corporation, Connersville, Ind.

Continuation-in-part of Ser. No. 22,552, March 25, 1970, abandoned. This application May 27, 1971, Ser. No. 147,506

Int. Cl. H02p 1/42

U.S. Cl. 318—207 R **20 Claims**

A circuit for the automatic starting of an induction motor of the type having a main or running winding and at least one phase or starting winding. The starting circuit comprises a current sensing means which is series connected with the main or running winding to a source of electrical power. Said sensing means is also series connected to the combination of a memory circuit and a threshold detection means. The high current drawn by the main or running winding, when initially energized, is sensed by the current sensing means and, when sufficiently high, a signal is passed to an interfacing device between a power source and the starting winding by the memory circuit and the detection means calibrated to pass the signal at voltages in excess of that voltage of the signal which exists when the motor is running at normal speed. This signal is present at the gate of the interfacing device during the entire time that the phase or starting winding is to be energized. The



interfacing device, in turn, connects the phase or starting winding of the motor to the power source. When the motor approaches normal running speed and the initial high current drawn by the main or running winding diminishes, the phase or starting winding of the motor will be disconnected from the power source through the action of the calibrated detection means, the memory circuit and deenergization of the gate of the interfacing device.

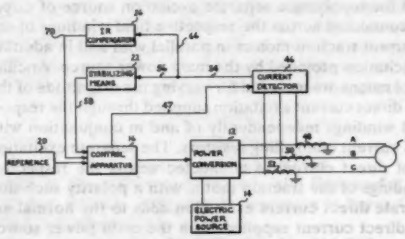
3,764,872
STABILIZING MEANS FOR AN A-C MOTOR DRIVE

William Knight Boice, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed June 13, 1972, Ser. No. 262,269

Int. Cl. H02p 5/16

U.S. Cl. 318—227 **6 Claims**



An a-c adjustable speed motor drive system including an a-c motor and power conversion means for converting d-c electric power to adjustable frequency, adjustable voltage electric power for delivery to the motor is provided with stabilizing means for damping motor speed oscillations. The stabilizing means includes apparatus for generating a signal proportional to the component of actual motor current that is in phase with the motor voltage and feedback means responsive to the in-phase signal for generating a stabilizing signal proportional to and phase shifted with respect to oscillations in the in-phase signal related to motor speed oscillations. The stabilizing signal is supplied to and utilized by the control apparatus for the power conversion means to adjust either the output frequency or the output voltage of the power conversion means. The feedback means includes resistive and capacitive elements connected in series between the in-phase signal generating apparatus and the control apparatus.

3,764,873

ELECTRICAL MOTOR CIRCUITS

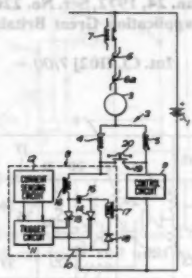
Royston David Elliott, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingshire, England

Filed Feb. 29, 1972, Ser. No. 230,288

Claims priority, application Great Britain, Apr. 4, 1971, 6,044/71

Int. Cl. H02p 1/22

U.S. Cl. 318—252 6 Claims



A motor which is pulse-operated by chopper circuits connected to its field windings has a safety circuit which has two possible oscillatory loops. One loop is coupled to thyristors in the chopper circuit and another loop is coupled to the output of an armature current sensor. Bias circuits disable the loops when the thyristors are conductive and armature current is too high. A normally closed relay is kept closed only when the safety circuit oscillates. Cessation of oscillations opens the relay which thereupon disables the motor. The safety circuit is self-checking; if it is itself inoperative the motor is still disabled.

3,764,874

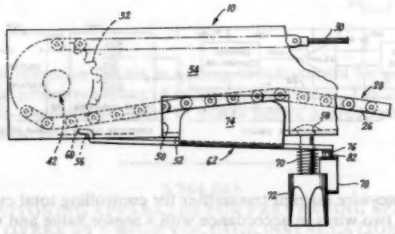
GARAGE DOOR OPENER WITH INSTANT REVERSE MECHANISM

David Charles Geoffrey, Warren, Mich., assignor to The Stanley Works, New Britain, Conn.

Filed Feb. 7, 1972, Ser. No. 223,901

Int. Cl. H02p 1/42

U.S. Cl. 318—266 7 Claims



An electrical operator assembly for garage doors and the like includes a reversible electric motor, a belt member and means deflecting the belt member from a straight line path. When the door operated by the assembly encounters an obstruction, the belt member overcomes the deflecting pressure and operates reversing switch means to reverse the direction of operation of the electric motor. The control circuitry includes a multiposition relay adapted to reverse the direction of operation of the motor upon change of the contacts closed therein when a signal is received from the reversing switch which transmits its signal directly to the relay. In addition, a disabling switch is directly responsive to operation of the drive means after a preselected period of travel in one direction to disable the reversing switch and prevent its transmission of a signal to the motor when the door approaches the end of its preselected period of travel in that direction. The motor remains in closed circuit contact with the relay means during reversal of direction by the reversing switch.

3,764,875

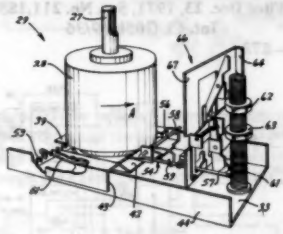
DOOR OPERATOR

Donald S. Harris, Dallas, Tex., assignor to Overhead Door Corporation, Dallas, Tex.

Filed Feb. 28, 1972, Ser. No. 229,811

Int. Cl. H02p 1/44

U.S. Cl. 318—266 17 Claims



A door operator for opening and closing an upwardly acting door and including a power unit having reversible motor means for driving the operator. The motor means is associated with a control circuit which includes upper and lower limit switches actuated when the door is in the opened and closed positions, respectively, which limit switches are connected in parallel and control the reversing of the motor rotation. The circuit also includes a reversing switch for reversing the motor rotation and door movement automatically if the door engages an obstacle during movement in the closing direction. Control means are associated with the reversing switch for deactivating same when the door is positioned closely adjacent but slightly spaced from its fully closed position to prevent undesired reversing of the door. The control means also includes means for deactivating the reversing switch when the door is positioned closely adjacent but slightly spaced from its fully opened position.

3,764,876

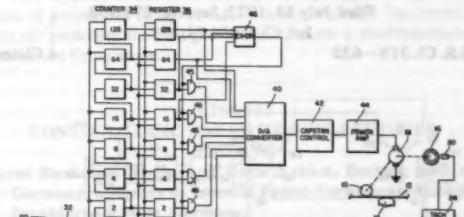
CAPSTAN CONTROL SYSTEM FOR A TAPE DRIVE

William C. Arthur, Boulder, Colo., assignor to Storage Technology Corporation, Boulder, Colo.

Filed Oct. 1, 1971, Ser. No. 185,611

Int. Cl. H02p 5/16

U.S. Cl. 318—326 10 Claims



A capstan control system for controlling the movement of magnetic tape past a magnetic head. The system controls the

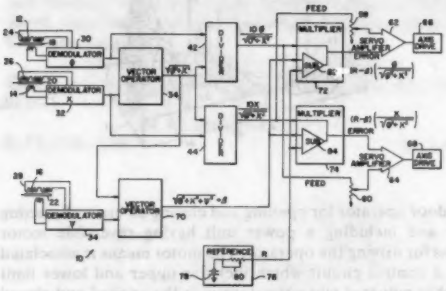
velocity of magnetic tape across the read/write head in a tape drive, rapidly accelerates the tape to a predetermined read/write velocity, linearly controls the read/write velocity about the predetermined velocity, linearly increases the tape speed to rewind velocity, linearly controls the rewind velocity, decreases the capstan velocity from rewind velocity to read/write velocity and stops the capstan during the read, write and rewind operations.

3,764,877

STRUCTURE FOR AND METHOD OF PATTERN TRACING CONTROL

Walter E. Meyer, Ferndale, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Dec. 23, 1971, Ser. No. 211,185
Int. Cl. G05b *19/36*
U.S. Cl. 318—578 **15 Claims**



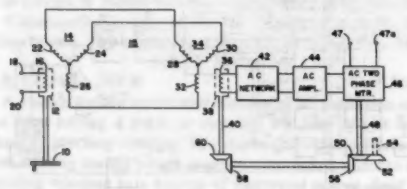
Structure for and method of sensing deflection of a pattern tracing probe in three mutually perpendicular directions, providing direction of feed signals for driving a tracing cutter over a workpiece connected to the probe in two of the three mutually perpendicular directions in accordance with the probe deflections sensed in the two directions, providing magnitude of error signals for driving the cutter over the workpiece in the two directions in accordance with a comparison between a signal representative of the three-dimensional resultant vector of the probe deflection sensed with a reference signal selected in accordance with an allowable tracing tolerance, driving the cutter in the two directions in accordance with the combined feed and error signals in each direction as the pattern is traversed from side to side and indexing the tracing probe and cutter in the third mutually perpendicular direction after each traverse of the pattern by the probe to reproduce the pattern in the workpiece.

3,764,878

WIDE BAND AC MODULATED CONTROL NETWORKS

Van A. McAuley, 3529 Rosedale Dr., Huntsville, Ala.

Filed July 14, 1972, Ser. No. 271,958
Int. Cl. G05d *23/275*
U.S. Cl. 318—632 **4 Claims**



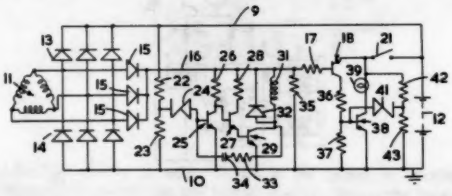
An electric impedance network for AC carrier frequency control systems which provides optimal arithmetical symmetry in frequency response with respect to the carrier frequency, characterized by having a symmetrical even amplitude response and a symmetrical odd phase response for a substantial frequency band around the carrier frequency.

3,764,879

BATTERY CHARGING SYSTEMS FOR ROAD VEHICLES

William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 24, 1972, Ser. No. 220,097
Claims priority, application Great Britain, Jan. 22, 1971, 2,939/71
Int. Cl. H02j *7/00*
U.S. Cl. 320—48 **1 Claim**



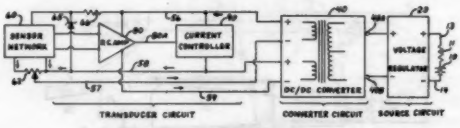
In a battery charging system for a road vehicle, an alternator with a field winding charges a battery connected between first and second supply lines, and also provides power to a third supply line. The voltage regulator of the system is connected between the third and second supply lines, and there is a high impedance series circuit connected between the first and second supply lines, including the vehicle ignition switch and an amplifying device which operates a warning device. Means is provided connecting the third line to the series circuit so that the warning device is rendered inoperative when the third and first supply lines are at substantially the same potential.

3,764,880

TWO-WIRE CURRENT TRANSMITTER WITH ISOLATED TRANSDUCER CIRCUIT

Robert C. Rose, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed May 8, 1972, Ser. No. 250,882
Int. Cl. G01k *7/02*
U.S. Cl. 321—2 **14 Claims**



A two-wire current transmitter for controlling total current in the two wires in accordance with a sensor value and which provides for isolation of the transducer circuitry from the load and power source through a single transformer.

3,764,881

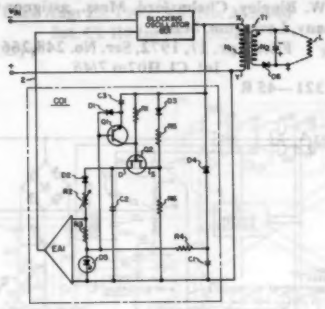
TRANSFORMER-COUPLED POWER CONVERTER SAMPLING SYSTEM

Robert M. Thomas, Brockville, Ontario, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 29, 1972, Ser. No. 267,350
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **6 Claims**

A transformer coupled DC-DC converter wherein the regulation of the output voltage is achieved by sampling the volt-

age across the transformer primary winding during a particular interval of the cycle. This sampling is achieved by the use of a field effect transistor that is gated on at a time just prior to



the time the transformer field collapses. This sample voltage is held by a charged capacitor and used to control a blocking oscillator.

3,764,882

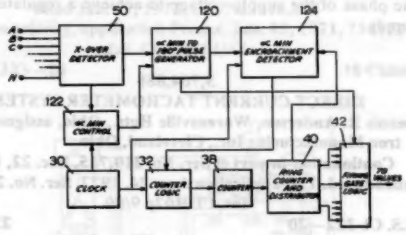
CONTROL APPARATUS FOR THE PREVENTION OF PREMATURE FIRING OF VALVES OF A CONVERTER

John Reeve, and Jura A. Sevcenco, both of Waterloo, Ontario, Canada, assignors to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed Oct. 30, 1972, Ser. No. 302,275

Int. Cl. H02m 7/20

U.S. Cl. 321—5 **3 Claims**



This invention relates to a firing circuit control for prevention of premature firing of valves in a converter. The control circuit prohibits the firing of valves before a predetermined minimum firing angle.

3,764,883

MONITORING APPARATUS FOR PREVENTING SPARK-OVERS AT A HIGH VOLTAGE INSTALLATION

Franz Braun Staad, and Peter Ribnitz, both of St. Gallen, Switzerland, assignors to Gema AG Apparatebau, St. Gallen, Switzerland

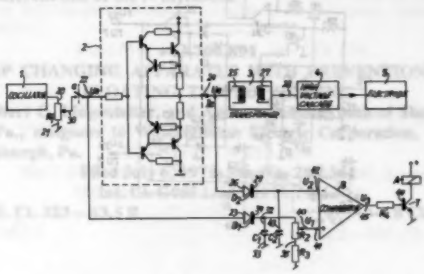
Filed Oct. 26, 1972, Ser. No. 301,149

Claims priority, application Switzerland, Oct. 28, 1971, 15725/71

Int. Cl. H02m 1/18

U.S. Cl. 321—11 **6 Claims**

A monitoring apparatus for preventing a spark-over at a high voltage installation for corona electrodes comprising a high-frequency voltage source and a high voltage transformer, the secondary winding of which is coupled through the agency of a high voltage cascade with the corona electrode. The high-frequency voltage source is connected via a power amplifier, which starting from a certain value of its output current exhibits current limiting and decreasing output voltage characteristics, with the primary winding of the high voltage transformer. A comparator has its inputs coupled with the input



and output respectively of the power amplifier and in the event the output voltage of the power amplifier is smaller than its input voltage interrupts the current circuit to the corona electrode through the agency of a cutoff mechanism.

3,764,884

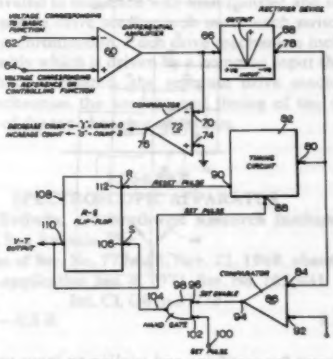
VOLTAGE TO TIME CONVERSION APPARATUS FOR AN ELECTRICAL CONVERTER

John Reeve, Waterloo, Ontario, Canada, assignor to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed Oct. 30, 1972, Ser. No. 301,972

Int. Cl. H02m 1/12

U.S. Cl. 321—9 A **3 Claims**



This invention relates to a firing circuit control for prevention of premature firing of valves in a converter. The control circuit prohibits the firing of valves before a predetermined minimum firing angle.

3,764,885

CONTROL LOGIC FOR SWITCHING RECTIFIER SYSTEMS

Arne Buxbaum, Berlin, and Horst Kahlen, Bocholt, both of Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed Aug. 18, 1971, Ser. No. 172,720

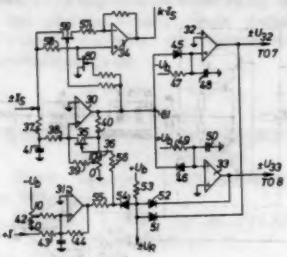
Claims priority, application Germany, Aug. 19, 1970, P 20 42 107.2

Int. Cl. H02m 1/18; H02p

U.S. Cl. 321—13 **12 Claims**

In a switching logic for a current controller of the type employing two groups of controlled rectifiers connected in paral-

lel opposition and each arranged for delivering current in a respectively different direction, the logic functions are performed by operational amplifiers or comparators operating as switching elements.



3,764,886

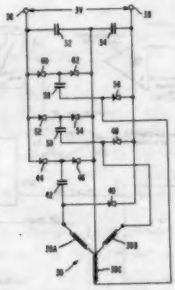
THREE-PHASE VOLTAGE TRIPLING RECTIFIER CIRCUIT

Charles Bezalel Zarowin, Fairfield, Conn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,385

Int. Cl. H02m 7/00

U.S. Cl. 321—15 **3 Claims**



A circuit for rectifying and tripling an input voltage from a three-phase source is described. The three-phase input voltage source is connected to the circuit via a wye connected secondary transformer, winding. The center point of the wye connected winding is connected to the midpoint of first and second series connected output capacitors. The other sides of the first and second output capacitors are connected to first and second output terminals respectively. The end of each leg of the three wye connected windings are connected through the second output terminal through a separate reverse biased diode. The end of each leg of the three wye connected windings are also connected through a separate capacitor to the mid-point of separate pairs of two diodes connected in series. One of the diodes of each pair is connected in reverse bias to the mid-point of the output capacitors and the other diode of each pair is connected in forward bias to the first output terminal. Thus, each of the three wye connected windings are connected through circuits including diodes and capacitors and the circuits are connected in parallel across the output terminals to provide a rectified output voltage which is three times the magnitude of the input voltage.

3,764,887

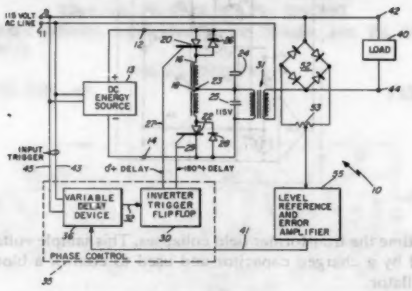
VECTOR ADDITION SINE WAVE POWER CONTROL USING SINGLE INVERTER AND RETURN OF ENERGY TO INVERTER SOURCE

Donald W. Bingley, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 27, 1972, Ser. No. 248,266

Int. Cl. H02m 7/48

U.S. Cl. 321—45 R **11 Claims**



An alternating current power supply control circuit utilizing a single sine wave inverter having a sine wave output which is derived from a DC source which presents a constant voltage to a load, is coupled to an unregulated AC supply voltage to add or subtract therefrom an incremental voltage required for regulation of the AC supply voltage. Unwanted or excess energy in the inverter is returned to the DC source to conserve power and prevent voltage build up in the inverter. The resultant output voltage which, if desired, may be converted by rectification to DC is compared with a desired voltage reference to generate an error signal to control the relative phase of the sine wave output of the inverter with respect to the phase of the supply voltage to achieve a regulated power supply.

3,764,888

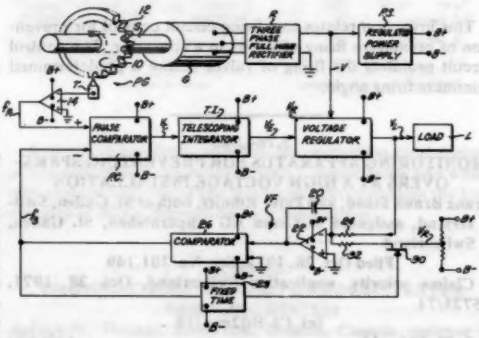
DIRECT CURRENT TACHOMETER SYSTEM

Dennis R. Anderson, Warensville Hgts., Ohio, assignor to Avtron Manufacturing Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 210,715, Dec. 22, 1971, abandoned. This application Aug. 24, 1972, Ser. No. 283,275

Int. Cl. H02p 9/00

U.S. Cl. 322—20 **22 Claims**



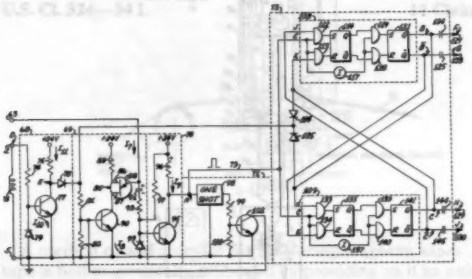
A direct current tachometer system provides a DC output signal having a magnitude which varies with the tachometer speed. Reference pulses are generated exhibiting a frequency proportional to tachometer speed. A control circuit serves to vary the magnitude of the DC output signal in dependence upon the frequency of the reference pulses.

3,764,889

SEQUENCER FOR A DUAL SWITCHING REGULATOR

John R. Nowell, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 23, 1972, Ser. No. 283,240
Int. Cl. H02m *1/08, 3/32*
U.S. Cl. 323—17 8 Claims



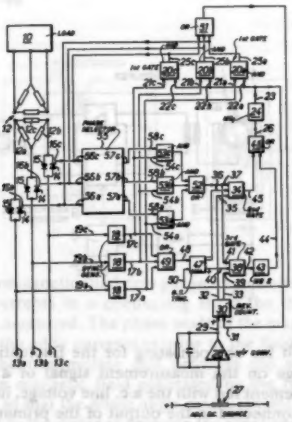
The sequencer employs an oscillator, a disable circuit, a timer and a pair of master-slave flip-flops to provide pulses for operating a dual switching regulator. The disable circuit and timer prevent the generation of pulses while a portion of the switching regulator is delivering current to an output terminal and thereby prevent possible damage to the switching regulator.

3,764,890

APPARATUS FOR CONTROLLING POWER TRANSMITTED BY A GROUP OF N PHASE CONDUCTORS

Claude Nephtale Caen, Saint-Cloud, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Jan. 17, 1972, Ser. No. 218,275
Claims priority, application France, Jan. 15, 1971, 7101242
Int. Cl. G05f *1/44*
U.S. Cl. 323—24 10 Claims



An apparatus for controlling the electric power transmitted by a group of N phase conductors supplied with N-phase alternating current, by means of controlled thyristors operative during substantially full half-periods, each of said thyristors being series connected with a respective one of said conductors and being adapted to receive a firing pulse conditioned by the transmission of a synchronizing pulse delivered in each period of said alternating current at zero crossings of the supply voltage of the corresponding phase conductor.

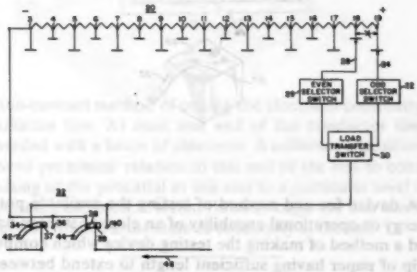
The described apparatus is intended to bring the mean value of the voltage to zero at any two of the load terminals by producing successive cycles comprising N trains of consecutive conductive half-periods in which the first half-period of each of the N trains corresponds in turn with the triggering of a different one of the N thyristors.

3,764,891

TAP CHANGING APPARATUS WITH PREVENTION OF FLOATING TAPPED WINDING

Robert C. Lingenfelter, and Andrew Sabella, both of Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 6, 1972, Ser. No. 269,361
Int. Cl. G05f *1/14*; H01h *19/12*
U.S. Cl. 323—43.5 R 8 Claims



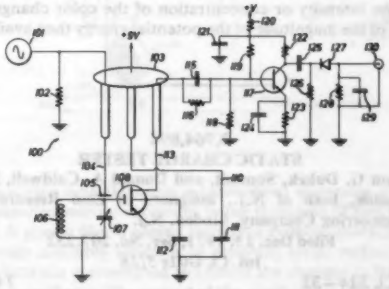
Apparatus for providing tap changes without producing a floating tapped winding. A make-before-break reversing switch is activated in sequence with load transfer and selector switches. Separate drive mechanisms move each switch with the proper synchronization. Each drive mechanism includes a geneva assembly which is driven by a common input shaft. As the input shaft is rotated, the separate drive mechanisms properly synchronize the amount and timing of the moving components of the tap changing apparatus.

3,764,892

SPECTROSCOPIC APPARATUS

William L. Rollwitz, c/o Southwest Research Institute, P.O. Box 2296, San Antonio, Tex.

Continuation of Ser. No. 777,655, Nov. 21, 1968, abandoned.
This application Jan. 4, 1971, Ser. No. 103,841
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R 8 Claims



A magnetic resonance spectroanalysis device is disclosed. A sample having an isotope of interest is passed through a coil. The sample is subjected to nuclear magnetic resonance, electron magnetic resonance, or nuclear quadrapole resonance.

The sample forms signals interacting with a radiofrequency tank circuit including a coil made of superconducting materials and operated below the critical temperature. Signals indicative of the sample are proportional to the Q of the coil which is increased from perhaps 10^2 to about 10^7 or 10^8.

3,764,893

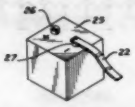
METHOD FOR TESTING STORAGE BATTERIES FOR INTERNAL LEAKAGE USING A CHEMICALLY TREATED TEST STRIP

Warren E. Weigand, 1676 Alhambra Ln., Oakland, Calif.

Filed Nov. 10, 1971, Ser. No. 197,399

Int. Cl. G01n *27/42*

U.S. Cl. 324—29.5 **3 Claims**



A device for and method of testing the available potential energy or operational capability of an electric storage battery; and a method of making the testing device which comprises a strip of paper having sufficient length to extend between and firmly engage the positive and negative terminals of a battery. The strip is impregnated with an indicator substance such as phenolphthalein responsive to the presence of a basic solution to provide color indicia representative of the concentration thereof and it is further impregnated with an electrolytic solution effective when electrolyzed to produce the basic solution to which the indicator substance is responsive. The method of preparing the test strip includes the steps of impregnating the same with both the indicator substance and electrolyte; and the method of testing a battery to determine its available potential energy includes: first, the step of pressing the strip against the negative terminal of the battery; and second, the step of pressing the strip against each of the terminals of the battery to effect a current flow through the electrolytic solution carried by the strip. After each such step the strip is inspected to observe any color change about the area of the strip in engagement with the negative terminal. A color change after the first test step is an index of a defective battery occasioned by internal current leakage, and the aggregate intensity or concentration of any such color is an index of the magnitude of the leakage. A color change after the second test step establishes that the battery has available potential energy, and the intensity or concentration of the color change is an index of the magnitude of the potential energy then available.

3,764,894

STATIC CHARGE TESTER

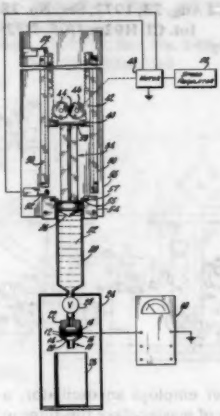
William G. Dukek, Summit, and Donald A. Caldwell, Mountainside, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 13, 1971, Ser. No. 207,232

Int. Cl. G01r *5/28*

U.S. Cl. 324—32 **7 Claims**

An apparatus whereby the tendency of fuels to build static charges is measured. Also, filters used in fuel delivery systems may be tested to determine their potential for developing static charges which could lead to hazardous conditions during filling of tanks. A known volume of fuel is passed in a controlled manner through a filter and the streaming current is measured by an electrometer. A comparison is made with



standard fuels and/or filters to establish a relative charging tendency and thereby to predict the static discharge hazard which may be incurred.

3,764,895

APPARATUS FOR COMPENSATING AN INDUCTION FLOW METER FOR FLUCTUATIONS IN THE A.C. SUPPLY VOLTAGE

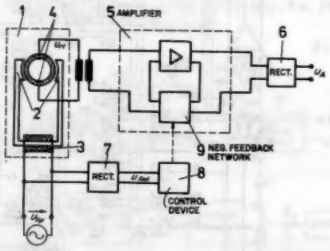
Franco P. DiMarco, Stuttgart-Bad Cannstatt, Germany, assignor to J. C. Eckardt AG, Stuttgart-Bad Cannstatt, Germany

Filed Apr. 22, 1971, Ser. No. 136,400

Claims priority, application Germany, Apr. 23, 1970, P 20 19 613.8

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 FL **2 Claims**



A circuit for compensating for the fluctuations of an a.c. line voltage on the measurement signal of a measurement pick-up element fed with the a.c. line voltage, in which an amplifier is connected in the output of the primary pick-up element whose amplification factor is changed inversely proportional to the influence of the a.c. line voltage fluctuations on the signal produced by the primary pick-up element wherein the amplifier is provided with a negative feedback circuit including a variable resistor which is controlled in response to a reference signal dependent on the AC supply voltage as well as by a constant auxiliary signal applied directly to the variable resistor so that the value of this resistor is controlled as a function of the difference between the auxiliary signal and the reference signal.

3,764,896

METHOD OF AND DEVICE FOR MEASURING THE LENGTH OF A MAGNETIZABLE TAPE

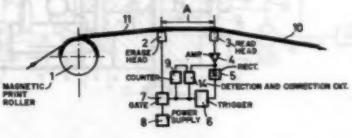
Godefridus Johannes Manders, Oosterhout, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,870

Claims priority, application Netherlands, Mar. 10, 1971, 7103155

Int. Cl. G01r 33/00

U.S. Cl. 324—34 L 11 Claims



A method of and a device for measuring magnetic tapes. A tape is first magnetically calibrated by providing on it an uninterrupted pattern consisting of an iterative signal of a fixed wavelength which is divided into block trains by means of a reading head and erasing head controlled by the output signal of the reading head, which heads are placed at an accurately determined mutual distance. The number of block trains is a measure of the length of the tape, while the number of wavelengths per block is constantly compared with a previously determined number and, in the case of a deviation (disturbance), a correction circuit is switched on to inhibit the erase head.

3,764,897

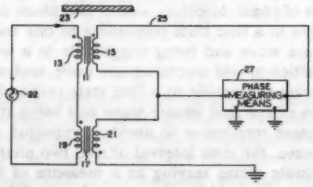
ELECTROMAGNETIC THICKNESS GAUGING USING A TRANSMITTING COIL SHAPED TO PROVIDE A CONSTANT FIELD OVER A RANGE OF MEASURING DISTANCES

Ivan A. Greenwood, Stamford, Conn., assignor to The Singer Company, Little Falls, N.J.

Filed Dec. 28, 1971, Ser. No. 212,899

Int. Cl. G01r 33/00

U.S. Cl. 324—40 18 Claims



In an electromagnetic thickness gauge a transmitting coil induces eddy currents in a conducting sheet the thickness of which is to be measured. The phase angle of the magnetic field generated by the eddy currents relative to the field generated directly by the transmitting coil provides the measure of thickness. The magnetic field generated by the transmitting coil is shaped so that the phase angle measurement is substantially constant as the distance between the sheet and the transmitting coil changes. This constant phase angle is achieved by designing the coil to produce an electromagnetic field in which the scalar magnetic potential varies as a single exponential over a selected range of distances from the transmitting coil. Two eddy current measurements in which the phase angles are different functions of the thickness and conductivity are taken so that both the thickness and conductivity can be determined from the two measurements by solving simultaneous equations.

3,764,898

METHODS OF TESTING THE CONTINUITY OF AN ELECTRICAL CONDUCTOR BY USE OF AN ELECTRON BEAM

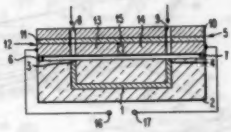
Harald Bohlen, Sindelfingen; Helmut Engelke, and Jurgen Landrock, both of Holzgerlingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1972, Ser. No. 252,774

Claims priority, application Germany, July 28, 1971, P 21 37 619.2

Int. Cl. G01r 31/02

U.S. Cl. 324—51 13 Claims



A non-contact method of testing the electrical continuity of a conductor line. At least one end of the conductor line is bombarded with a beam of electrons. A collector is positioned in spaced proximate relation to this end of the line to control the raising of the potential at this end to a particular level due to secondary emission. Current flows through the line which is measured to indicate the state of continuity in the line.

3,764,899

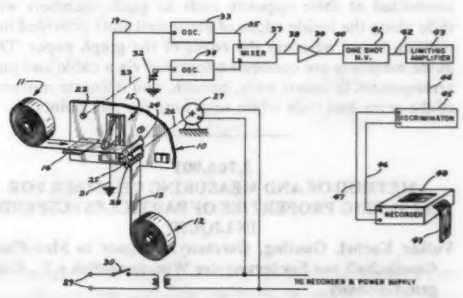
APPARATUS FOR MEASURING VARIATIONS IN THICKNESS OF ELONGATED SAMPLES OF THIN PLASTIC FILM

Paul H. Peterson, Bloomington, and Duwayne M. Thon, Edina, both of Minn., assignors to Winzen Research, Inc., Minneapolis, Minn.

Continuation of Ser. No. 883,415, Dec. 9, 1969, abandoned. This application Feb. 14, 1972, Ser. No. 226,226

Int. Cl. G01r 27/26

U.S. Cl. 324—61 R 5 Claims

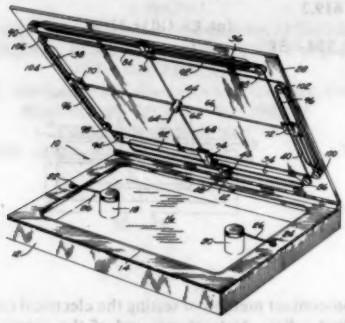


Capacitive type thickness measurement apparatus capable of measuring minute variations in the thickness of thin plastic films. A plastic film is passed through a suitably characterized electrode assembly which is of generally small surface area. The electrode is connected to control the changes in frequency of an oscillator. The output of the oscillator is suitably converted to provide a train of standardized, or constant energy pulses, from which an energy content determination is made to provide a recordable indication of the thickness of the plastic material.

3,764,900
ELECTROLYTIC ELECTRICAL FIELD MAPPING DEVICE

Keith M. Baldwin, Hancock, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Feb. 3, 1972, Ser. No. 223,085
Int. Cl. G01r *29/14, 19/08*
U.S. Cl. 324—71 R **8 Claims**



The device includes a plotting board which overlies an electrolyte tank and on top of which a sheet of graph paper is positioned for plotting the electrical field distribution between electrodes immersed in the electrolyte. A movable, exploratory probe assembly, including a stylus extending into the electrolyte, is slidably mounted on a pair of perpendicularly corssing guide rods located beneath the plotting board. The guide rods are connected to correspondingly crossing arms, which are positioned above the plotting board and are slidably mounted thereto so that movement of the arms in the *x* and *y* directions produces corresponding movement of the exploratory stylus. Each arm has an elongated slot which always intersect directly above the exploratory stylus as the arms (and thus the exploratory stylus) are moved to locate a null point. When a null point is detected, its location can be recorded directly onto the graph paper by inserting a pencil, ball point or the like through the opening provided by the intersecting slots.

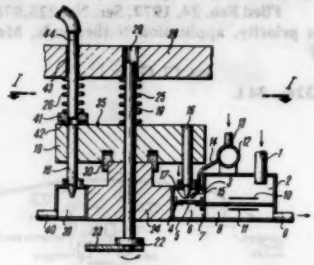
In a preferred embodiment, the arms and guide rods are connected at their opposite ends to guide members which slide along the inside edges of elongated slots provided in the plotting board adjacent the edges of the graph paper. These guide members are connected together via a cable and pulley arrangement to insure easy, smooth, and accurate movement of the arms and rods while searching for null points.

3,764,901
METHOD OF AND MEASURING CHAMBER FOR MEASURING PROPERTIES OF PARTICLES SUSPENDED IN LIQUID

Volker Kachel, Gauting, Germany, assignor to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Gottingen, Germany

Filed Apr. 27, 1972, Ser. No. 248,006
Claims priority, application Germany, Apr. 28, 1971, P 21 20 793.2
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **13 Claims**

In a measuring chamber, in a space immediately upstream of a measuring opening, there are disposed, for each measuring step, at least two entrance tubules from which particle suspensions are introduced into an electrolyte flow in such a manner that the particle flow paths within the measuring opening are each at the same radial distance from the center of the measuring opening or from the edge thereof. The outlet openings of the said at least two entrance tubules are arranged at identical distances from, and in rotational symmetry with respect to the axis of the measuring opening. One of the tubules contains a sample suspension and is, by mechanical

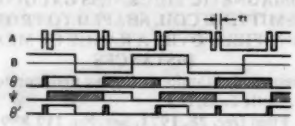


operation, replaceable by another tubule to effect a series of tests, while the other tubule contains a calibrating suspension for calibrating the electric pulses generated upon passage of the sample suspension through said measuring opening.

3,764,902
PHASEMETER EMPLOYING MEANS FOR PREVENTING ERRORS IN THE PHASE READING PRODUCED BY NOISE

Thomas G. Rodine, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 24, 1972, Ser. No. 246,625
Int. Cl. G01r *25/00;* **H03d** *13/00*
U.S. Cl. 324—83 R **7 Claims**



A phasemeter employing means for converting each of the two incoming AC signals into square wave signals and including a pair of phase detectors, one of said phase detectors being triggerable to a first state responsive to one transition of the first square wave and being triggerable to a second state by one transition of said second square wave, said other phase detector being triggerable to a first state responsive to another transition of the first square wave and being triggerable to a second state responsive to another transition of the second square wave, the time interval of said two phase detectors in said separate states serving as a measure of the phase difference between said two incoming signals. False triggering of either of said phase detectors due to noise on one of the incoming signals producing multiple transitions of said associated square wave is corrected by utilizing a logic circuit for detecting the instantaneous states of the two square wave signals and the two phase detectors and producing an error signal when one of said phase detectors is in the incorrect state for changing it to the correct size.

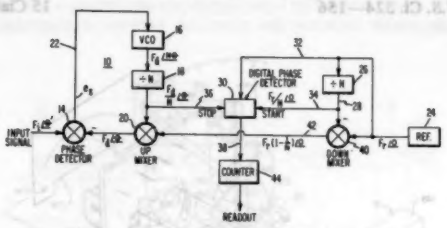
3,764,903
PHASE MEASURING SYSTEM

Frederick Bethel Griswold, Roosevelt, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,266
Int. Cl. G01r *25/00;* **H03d** *13/00*
U.S. Cl. 324—83 D **10 Claims**

A phase measuring system includes apparatus for measuring the difference in phase between a periodic input signal and a

reference signal while using the same reference signal as a clock whose periods are counted as a measure of the difference in phase between the reference signal and the input signal. This is accomplished by first multiplying the phase of the input signal and then dividing its frequency and phase by a



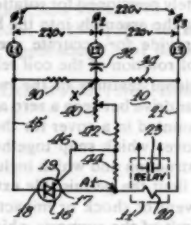
given amount and comparing this divided signal with the reference signal whose frequency and phase is also divided by the same amount. The two divided signals serve to respectively enable and disable a gate which passes the reference signal to a counter whose count manifests the phase difference between the two signals being compared.

3,764,904

MONITOR FOR PHASE SEQUENCE AND LOSS

John J. Drexler, Moline, Ill., assignor to Montgomery Elevator Company, Moline, Ill.

Filed Dec. 7, 1970, Ser. No. 95,803
Int. Cl. G01r *25/00*
U.S. Cl. 324—86 **11 Claims**



A monitor detects improper phase sequence or phase loss in a three phase system. A thyristor and a series connected relay are directly connected between two line conductors. A network using only two resistors and one capacitor connects all three line conductors to a summing junction connected through a variable resistive path to the gate of the thyristor to continuously actuate the relay when the desired phase sequence rotation is present.

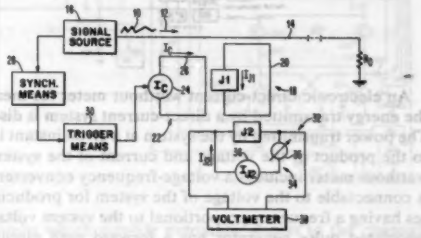
3,764,905

APPARATUS FOR MEASURING PULSED SIGNALS USING JOSEPHSON TUNNELING DEVICES

Hans H. Zappe, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,810
Int. Cl. G01r *19/00, 27/28*
U.S. Cl. 324—102 **20 Claims**

A device and method for measurement of ultra fast waveforms with increased accuracy and storage capability. A superconducting loop contains at least one Josephson tunneling device and is located adjacent to the signal line along which travels the waveform to be measured. Magnetic flux from the waveform intercepts the loop in an amount which is dependent upon the amplitude of the waveform at any instance in time. Control means is provided to switch the Josephson tunneling device to its zero voltage state at the time the waveform is to be sampled. This traps the magnetic flux due to the waveform and the flux will remain stored in a loop as long as the Josephson tunneling device remains in its zero



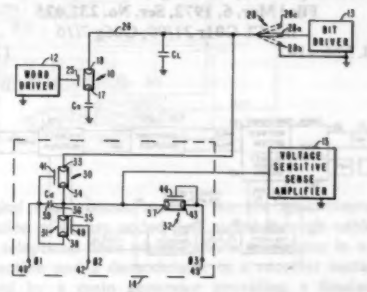
voltage state. A test Josephson tunnel device located adjacent to the superconducting loop can be used to detect the amount of flux trapped in the loop. Non-repetitive pulses can be sampled and the device has a possible resolution of 5 picoseconds. The bandwidth of the non-repetitive signal pulses can be 100 gHz.

3,764,906

STORED CHARGE DETECTION BY CHARGE TRANSFER

Lawrence Griffith Heller, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,604
Int. Cl. G01r *1/00*; H02m *3/06*
U.S. Cl. 324—111 **13 Claims**



The amount of charge stored in a charge storage system can be transferred with negligible loss from the storage system to a charge detector without regard to the size of any distributed capacitance present on the line transferring the charge. This is achieved by charging a detector capacitor and the capacitance of the transfer line, to a reference voltage, allowing the stored charge system and the transfer line capacitance to equalize at a voltage level below the reference voltage, and transferring charge from the detector capacitor to the line capacitance and the charge storage system to return the line and the charge storage system to the reference voltage of charge. The voltage remaining on the detector capacitor is then equal to the original state of charge in the storage system.

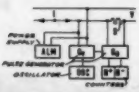
A particular circuit for performing this method in conjunction with semiconductor memory arrays is also disclosed.

3,764,907

ELECTRONIC DIRECT-CURRENT WATTHOUR METER

Antonio Langella, and Giorgio Savastano, both of Naples, Italy

Filed Sept. 18, 1972, Ser. No. 289,607
Int. Cl. G01r 7/00
U.S. Cl. 324—141 19 Claims



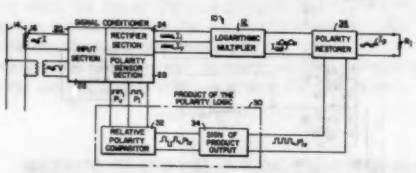
An electronic direct-current watthour meter for measuring the energy transmitted by a direct-current system is disclosed. The power transmitted by the system at a given instant is equal to the product of the voltage and current of the system. The watthour meter includes a voltage-frequency converter which is connectable to the voltage of the system for producing pulses having a frequency proportional to the system voltage. An associated pulse generator has a forward path circuit connectable to the system for receiving a quantity proportional to the current conducted by the system. The pulse generator provides an output in dependence upon this quantity and has a feedback circuit that includes a pulse former responsive to this output. The pulse former is connected so that it also receives the pulses of the voltage-frequency converter. With these inputs, the pulse former generates charging pulses having a charge value proportional to the period of the pulses generated by the converter whereby the charge value is inversely proportional to the voltage on the system and the charging pulses have a frequency proportional to the power transmitted by the system. A counter can be arranged to add the charging pulses and so count the energy transmitted by the system.

3,764,908

ELECTRONIC WATTMETER INCLUDING A SOLID-STATE LOGARITHMIC MULTIPLIER

Robert T. Elms, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1972, Ser. No. 232,025
Int. Cl. G01r 21/00; G06g 7/16
U.S. Cl. 324—142 11 Claims



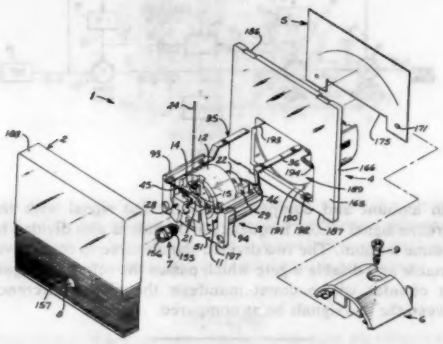
An electronic wattmeter includes a solid-state logarithmic multiplier of the single quadrant type for measuring true instantaneous values alternating current power. The logarithmic multiplier computes the product of the instantaneous absolute values of a current component and a voltage component defining an alternating current power quantity to be measured. The logarithmic multiplier includes compensating and sensitivity corrections for increasing accuracy and reliability. A product of the polarity logic senses the relative states of polarity of the voltage and current components. A polarity restorer inverts the logarithmic multiplier output signal in response to opposite polarity states of the voltage and current components as sensed in the logic. The electronic wattmeter output signal is provided at the polarity restorer output so as to be indicative of the true instantaneous values of the alternating current.

3,764,909

METER CONSTRUCTION HAVING RAPID ASSEMBLY FEATURES

David B. Pearson, Raritan, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Aug. 20, 1971, Ser. No. 173,425
Int. Cl. G01r 1/04, 1/00
U.S. Cl. 324—156 15 Claims



An electric meter particularly characterized by a small number of moving parts and simplified assembly by virtue of fixed cooperating locating surfaces on the elements and sub-assemblies of the meter. A magnetic circuit including a yoke and magnet are constructed to snap into an insulating base in a predetermined position on the base. A coil assembly initially including integral elements for connection of pivot bearings or taut bands is accurately positioned for rotation on the supporting base by inserting the assembly into the base. Cooperating locating surfaces provide for accurate predetermined positioning of the axis of rotation of the coil relative to the magnetic circuit. Additional features of the meter construction reside in a direct gear drive between a zero adjust element and zero adjust knob mounted in a cover for the meter, a unique base, casing, and cover which snap together, a coil support form of unique construction and which includes motion limiting elements which limit the permissible extent of movement of the coil in the event of shock or impact to positions well within the elastic limit of the supports which mount the coil for rotation, a unique mode of terminating the end connections for the coil without the need for stripping insulation, a unique mounting arrangement for the assembled meter, a unique rear mounting scale plate which provides for easily replacing scale plates to meet the needs of the user of the meter, a meter movement of a single size adapted to be used with casings and scales of various sizes whereby the number of different parts required to form meters of different sizes is maintained at a minimum, a unique insulating material base with flexibility to permit expanding the base during assembly of the meter, and sub-assemblies, components, and elements which can be assembled in only one position and orientation to assure proper assembly of the meter.

3,764,910

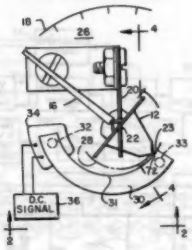
HIGH EFFICIENCY PERMANENT MAGNET METER

David P. Mason, Braintree, Mass., assignor to Beede Electrical Instrument Co., Inc., Penacook, N.H.

Filed Dec. 23, 1971, Ser. No. 211,477
Int. Cl. G01r 1/20, 1/00
U.S. Cl. 324—146 25 Claims

A permanent magnet meter for providing a scale indication of the magnitude of an electrical signal. The meter comprises a permanent magnet rotationally supported by a plurality of thin vanes loosely fitted through slots therein to allow rotation

of one vane with respect to another. An arctuate flux path of high permeability material is spaced from the permanent magnet to receive the magnetic flux through an air gap which increases with rotation of the magnet. The magnetic force between the magnet and flux path torques the magnet to a position of minimum air gap and biases the vanes pivots to minimize the motion resulting from the looseness of fit



between the vanes. An electrical coil is wound about the flux path and responds to the electrical signal being measured to provide a flux in the path counteracting that from the permanent magnet and causing rotation of the permanent magnet to a point of equilibrium at a new angle defined by an alteration in the permanent magnet flux in response to the coil induced flux.

3,764,911

DEVICES FOR MEASURING THE DURATION OF AN ELECTRICAL PULSE

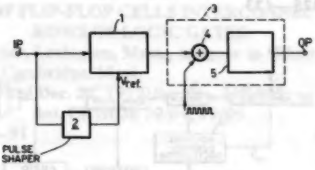
Peter William East, Felbridge, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,837

Claims priority, application Great Britain, Nov. 17, 1970, 54,620/70

Int. Cl. G04f *9/00, 11/06;* **H03k** *6/04*

U.S. Cl. 324—186 **13 Claims**



The specification of the application discloses a pulse width measuring device including a Schmitt trigger driven by the signal pulse and having a reference voltage derived from the signal pulse.

3,764,912

MULTIPLE CONTROL POINT SWITCHING SYSTEM HAVING AUTOMATIC ACCESS

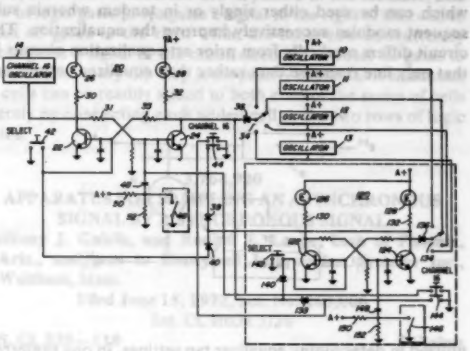
Richard H. Abraham, Waukegan, and Rolf E. Kowalewski, Palatine, both of Ill., assignors to Motorola Inc., Franklin Park, Ill.

Filed Sept. 7, 1972, Ser. No. 287,128

Int. Cl. H04b *1/44*

U.S. Cl. 325—22 **11 Claims**

A channel switching circuit for a two-way radio system employing a multivibrator to provide automatic reversion to a preselected channel when the microphone or handset is hung up. Means are provided to allow channel selection from



remote units which provide automatic access to the channel switching circuitry.

3,764,913

DIGITAL SYNCHRONOUS FM-MODEM

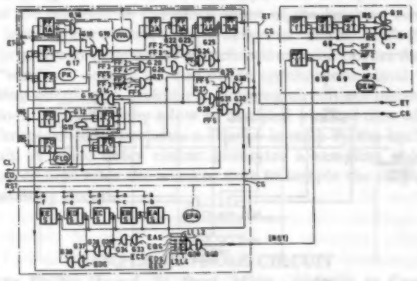
Gunter Ochel, and Jurgen Schroder, both of Bremen, Germany, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1972, Ser. No. 224,499

Claims priority, application Germany, Feb. 10, 1971, P 21 06 172.3

Int. Cl. H04b *1/40*

U.S. Cl. 325—30 **9 Claims**



A digital synchronous modem for the synchronous FM transmission of binary coded data signal through cables and internal telephone lines where both a modulator in a transmitter section and a demodulator in a receiver section are controlled by a main generator providing a fundamental frequency that is divided down to a clock frequency by a stepwise controllable digital divider. The divider synchronizes the receiver to the rythmn of received data signals by altering its division ratio in response to a control signal derived by comparing the zero crossings of the received data signal to the clock pulses.

3,764,914

HIGH SPEED LINE EQUALIZER

Maurice Karnaugh, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

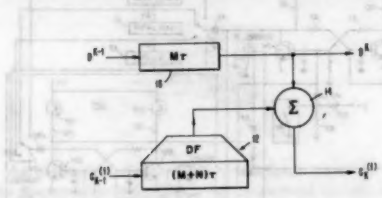
Filed Dec. 27, 1971, Ser. No. 212,546

Int. Cl. H04b *1/00;* **H03k** *5/159*

U.S. Cl. 325—42 **11 Claims**

An extremely fast equalizer is disclosed which utilizes only channel response data to control the equalizer settings. The

equalizer is adapted for operation in either the automatic or adaptive mode. A basic equalization module is developed which can be used either singly or in tandem wherein subsequent modules successively improve the equalization. The circuit differs markedly from prior art equalization circuits in that only line response data rather than equalizer outputs are



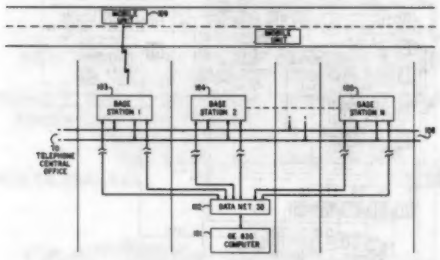
utilized in determining equalizer tap settings. In one preferred embodiment, the equalizer design is based on an expansion in powers of $F=P/(1-T)$ which converges rapidly and wherein P represents precursor intersymbol interference terms, and T represents tail intersymbol interference terms. This expansion results in an iterative equalizer configuration.

3,764,915

DYNAMIC PROGRAM CONTROL FOR CHANNEL ASSIGNMENT IN MOBILE COMMUNICATION SYSTEMS

Donald Clyde Cox, New Shrewsbury, and Douglas Otto John Reudink, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murry Hill N.J.

Filed June 25, 1971, Ser. No. 156,791
Int. Cl. H04q 7/00
U.S. Cl. 325—53 **7 Claims**



To determine a channel which may be advantageously assigned to a mobile user via a preferred one of a plurality of spacially remote base stations, a central control computer considers the status of use of all communication channels utilized by the system. All of these channels constitute but a single set, so any of them may be assigned to a mobile user by way of any base station. Thus, the allocation procedures utilized by the computer feature optimization tests which insure minimal station-to-station interference with optimal "packing" and reuse of the channels over the entire system.

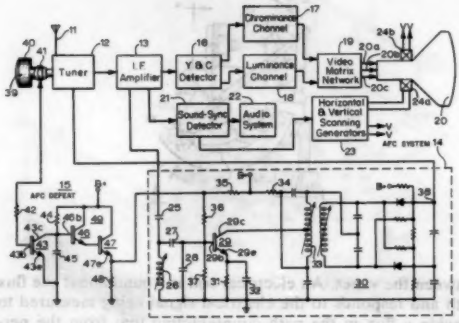
3,764,916

TOUCH ACTUATED TRANSISTORIZED AFC DEFEAT CIRCUIT

Richard G. Merrell, Darien, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 22, 1971, Ser. No. 210,996
Int. Cl. H04b 1/16
U.S. Cl. 325—418 **3 Claims**

An AFC defeat circuit in a television receiver for disabling the receiver's automatic frequency control (AFC) system during manual fine-tuning of the input tuner stage. The circuitry utilizes the potential developed across a storage capacitor in the output circuit of a "normally OFF" transistor to provide a d-c voltage to the high-potential end of a voltage divider biasing network in the AFC system. There is further provided a conventional, fine-tuning control knob coated with an electron-conductive material to derive an input signal during manual fine-tuning from low-frequency radiation picked up by the user's body. The input signal, approximating a sine wave, alternately switches the transistor between non-conductive



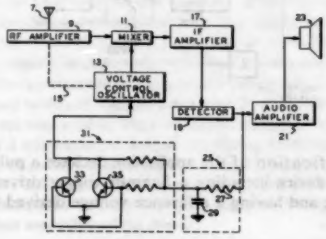
(OFF) and conductive (ON) states, charging and discharging the storage capacitor, respectively. When the transistor is OFF, the capacitor is charged through a high impedance; but when the transistor is ON, the capacitor discharges through the low impedance of the transistor. Due to the difference in RC time constants between the charge and discharge cycles, the collector output will be very nearly ground whenever the fine-tuning knob is actuated. Accordingly, when the fine-tuning knob is touched, the voltage divider bias is reduced to ground potential disabling the AFC system.

3,764,917

AUTOMATIC FREQUENCY CONTROL CIRCUIT

Dong Woo Rhee, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Continuation of Ser. No. 857,996, Sept. 15, 1969. This application June 29, 1972, Ser. No. 267,625
Int. Cl. H04b 1/16
U.S. Cl. 325—423 **5 Claims**



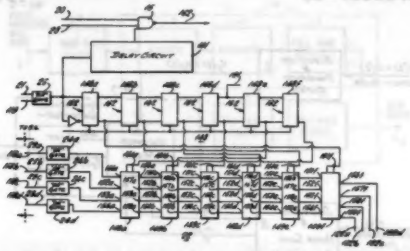
Automatic frequency control (AFC) circuitry includes a signal mixing means for deriving a difference signal from intercepted and locally developed signals, detecting means responsive to said difference signal to provide an output error signal, and a limiting means restricting the output error signal feed back to a locally developed signal means whereby the pull-in and hold-in ranges of the AFC system are controlled by the limiting means and manual switching to enhance station selection is rendered unnecessary.

3,764,918

TELEMETERING REMOTE RECORDING UNIT

Ross Hugh Evans, Queens, N.Y.; Daniel Arron Seltzer, Cincinnati, Ohio, and Robert Leonard Young, Florence, Ky., assignors to Gamon-Calmet Industries, Inc., Florence, Ky.

Division of Ser. No. 103,067, Dec. 31, 1970, Pat. No. 3,700,816. This application Jan. 24, 1972, Ser. No. 220,011
Int. Cl. C11c *19/00*
U.S. Cl. 328—37 9 Claims



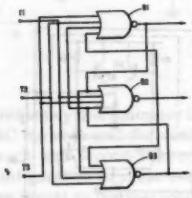
A system is disclosed for reading utility meters over a switched telephone network. In the system, information, including a telephone number is stored on a first punch card and reproduced by a card duplicator on a second initially blank punch card. The information representing the telephone number in addition to being reproduced on the second card, is also entered into a storage register. The number in the storage register is called up by an automatic calling unit and pulsed out onto a switched telephone network. The switched telephone network activates a meter reading circuit at an appropriate location represented by the telephone number. The meter reading circuit generates signals indicative of the meter reading and sends them back over the switched telephone network to be stored in the same storage register where the telephone number was entered. When the complete meter reading signal is in the storage register, the card duplicator is again activated to now receive information from the storage register. This information is then punched onto a still blank area on the second punch card. Details of the storage register and the circuitry at the meter are also disclosed.

3,764,919

AN N-ARY OF FLIP-FLOP CELLS INTERCONNECTED BY ROWS OF LOGIC GATES

Larry K. Baxter, Lexington, Mass., assignor to Shintron Company, Inc., Cambridge, Mass.

Filed Dec. 22, 1972, Ser. No. 317,827
Int. Cl. H03k *19/04, 19/06*
U.S. Cl. 328—91 4 Claims



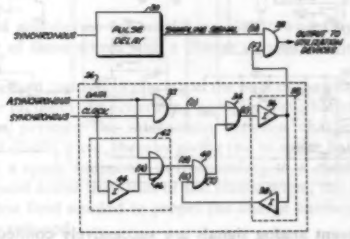
A n-ary flip-flop is constructed of a series of binary cells interconnected by two rows of logic gates. One row of logic gates provides a signal to a selected "set" cell when all cells to the left of the selected cell are reset and the other row of logic gates provides a signal to the selected cell when all cells to its right are in the reset state. The logic gate signals hold the selected cell in the "on" state after the original SET signal has decayed. When a different cell is placed in the set state, one row of logic gates propagates a signal to the right of that cell to reset all gates to the right while the other row concurrently propagates a signal in the other direction to reset all gates to the left. The n-ary flip-flop is modularly expandable inasmuch as cells can be readily added to both ends of the series of cells merely by connecting each added cell to the two rows of logic gates.

3,764,920

APPARATUS FOR SAMPLING AN ASYNCHRONOUS SIGNAL BY A SYNCHRONOUS SIGNAL

Anthony J. Galcik, and Ronald E. Lange, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 15, 1972, Ser. No. 263,066
Int. Cl. H03k *5/20*
U.S. Cl. 328—110 5 Claims



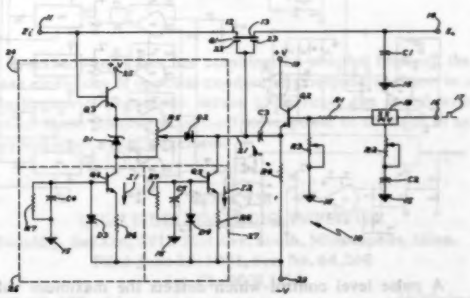
The asynchronous signal is complemented and directed to a latching logic circuit as the data input and the synchronous signal are directed to the clock input of the latching circuit. The latching circuit has built-in delays to reliably latch if the low or active portion of the asynchronous pulse occurs during the "window" or high portion of the synchronous signal. The latching circuit also includes a jamming circuit connected to its clock input whereby a low or disabled window time of the synchronous signal prevents a change in state by the latching circuit. A pulse delay circuit generates a sampling pulse a period of time after the window time to sample the output of the latching circuit.

3,764,921

SAMPLE AND HOLD CIRCUIT

George Phillip Huard, St. Paul, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 27, 1972, Ser. No. 301,385
Int. Cl. H03k *5/18, 17/30, 1/14*
U.S. Cl. 328—151 11 Claims



A sample and hold circuit, having a gate-operable switching device connected between an input and an output, a storage

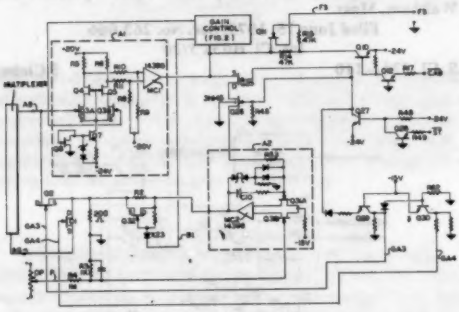
capacitor for storing signals, and a pulse generator for switching the switching device, is provided with a bias circuit for continuously biasing the switching device to a level immediately below the switching level.

3,764,922

AMPLIFIER OFFSET COMPENSATION ARRANGEMENT

Edward O. Gilbert, and Theodore A. Oliver, both of Ann Arbor, Mich., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Oct. 14, 1971, Ser. No. 189,162
Int. Cl. H04b *1/10, 15/00*; H03k *1/10*
U.S. Cl. 328—162 **8 Claims**



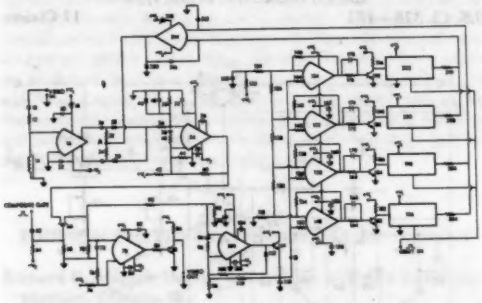
Different analog signals are successively connected to an amplifier, which may have a variable gain controlled by a digital computer, for example. When each analog signal is to be connected to the amplifier, the amplifier is first switched into a stabilizing mode in a closed-loop with an integrator so that the integrator charges up to a value commensurate with the offset voltage of the amplifier. The integrator output is then connected to the variable-gain amplifier during an immediately-following measurement mode to compensate for the amplifier offset.

3,764,923

AUTOMATIC PULSE LEVEL CONTROL

William H. Woodworth, China Lake; Marc L. Moulton, Ridgecrest, and James H. Whittington, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1972, Ser. No. 237,163
Int. Cl. H03k *5/08*; H03b *3/02*
U.S. Cl. 328—175 **7 Claims**



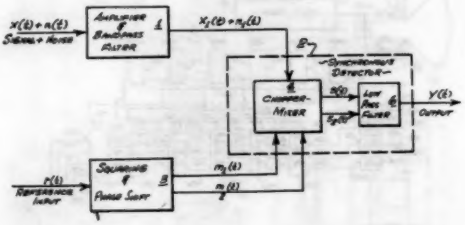
A pulse level control which detects the maximum video level change (contrast) present during the gate interval and designates this as the desired target so that the target may be sorted from the background present in the tracking gate. The control provides a constant pulse level output for a varying input level, which is accomplished by the use of digital circuitry in the pulse stretching portion of the control loop.

3,764,924

SYNCHRONOUS DETECTION SYSTEM

Lawrence C. Caplan, Los Angeles, and Richard Stern, Encino, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 8, 1972, Ser. No. 250,906
Int. Cl. H03d *3/18*
U.S. Cl. 329—50 **12 Claims**



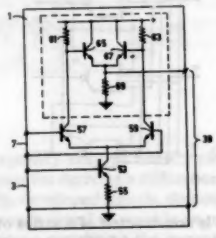
A periodic signal to be detected plus associated noise components are amplified, filtered and applied as an input to a pair of chopper switches gated synchronously with the signal to switchably chop the signal into phase-locked, complementary half wave portions. In effect, each of the chopper outputs has a direct current waveform with one of the outputs being opposite in sign to the other. The chopper outputs then are applied as separate inputs to the inverting and non-inverting inputs of a differential, low-pass, narrowband filter to eliminate random noise as well as any common errors present on both of half-wave inputs. The output of the low-pass filter is a single-polarity dc voltage which being proportional to the amplitude of the signal to be detected, provides the means for detecting the signal. A reference signal is used to gate the choppers and preferably it is processed by an integrated logic circuit to provide a pair of complementary gating signals one of which is with the input signal and the other 180° out of phase. The chopper switches may be MOSFET components interconnected in a series-shunt configuration which permits very rapid switching to provide distortion-free operation over a wide range of signal frequencies (1–5MHz).

3,764,925

DEMODULATOR CIRCUIT

Karl Frans Nickl Von Nikelsberg, and Gerrit Kool, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 221,001
Claims priority, application Netherlands, Feb. 17, 1971, 7102078
Int. Cl. H03d *3/18*
U.S. Cl. 329—50 **4 Claims**



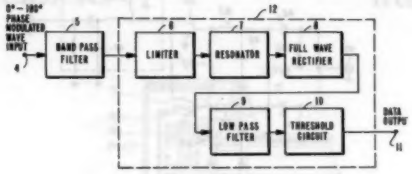
A synchronous demodulator circuit for a television receiver in which interference signals corresponding to troublesome white are obviated by full-wave rectification of the signal demodulated by the circuit arrangement.

3,764,926

METHOD AND APPARATUS FOR DEMODULATING A PHASE REVERSAL MODULATED ALTERNATING CURRENT WAVE

Chandos A. Rypinski, Jr., Tiburon, Calif., assignor to Rydax, Incorporated, San Rafael, Calif.

Filed Dec. 2, 1971, Ser. No. 204,230
Int. Cl. H04l 27/22
U.S. Cl. 329—104 8 Claims



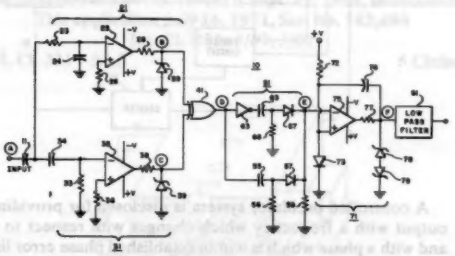
A method and apparatus is provided for deriving binary data from an alternating current wave modulated by phase reversals in which an amplitude limited wave is applied to a resonator which has a preselected frequency and Q such that the resonator provides a signal having amplitude fluctuations corresponding to the phase reversals of the applied alternating current wave. The signal from the resonator is rectified and applied to a threshold circuit which provides an output signal which identifies each phase reversal of the alternating current wave therby representing the binary data borne by the alternating current wave.

3,764,927

WIDE BAND FREQUENCY DISCRIMINATOR

William B. Allinger, and Steven J. Davis, both of Norwalk, Conn., assignors to General DataComm Industries, Norwalk, Conn.

Filed Dec. 7, 1971, Ser. No. 205,734
Int. Cl. H04l 27/14
U.S. Cl. 329—104 17 Claims



A wide band frequency discriminator is described having at its input a first RC network and first limiter in parallel with a second RC network and second limiter. The RC time constants and the configuration of the two parallel circuits are chosen so that the inputs to the two limiters have a 90° phase difference. An EXCLUSIVE OR combines the outputs of the two limiters to produce a square wave having twice the frequency of the input signal. A differentiating circuit and one-shot further process the square wave signal to form a signal having four times the frequency of the input signal. The frequency of the input signal may then be detected by passing the output of the one-shot through a low-pass filter.

3,764,928

METHODS AND DEVICES FOR AMPLIFYING ELASTIC WAVES

Francois Gires; Charles Maerfeld, and Pierre Tournois, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 8, 1972, Ser. No. 287,367
Claims priority, application France, Sept. 10, 1971, 7132717
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 9 Claims

Method and device for amplifying elastic waves by the interaction of these waves with a charge carrier wave of lower speed.

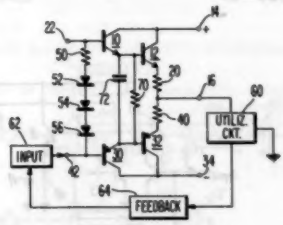
The method consists in placing in the path of the charge carrier wave facilities for generating periodic disturbances, so as to render periodic the interaction between charge carrier wave and elastic wave, thereby giving rise to space harmonics. By using a space harmonic corresponding to a carrier wave with a speed lower than that of the elastic wave, the value of the electric field needed to propel the charge carriers is considerably reduced.

3,764,929

PUSH-PULL DARLINGTON AMPLIFIER WITH TURN-OFF COMPENSATION

Joseph Ferriera Alves, III, Milford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 7, 1971, Ser. No. 150,436
Int. Cl. H03f 3/26
U.S. Cl. 330—15 4 Claims



A resistor and capacitor combination coupled between the base electrodes of opposite conductivity output transistors in a Darlington configuration serves to increase the speed with which these transistors turn-off in response to changes in an applied input signal waveform.

3,764,930

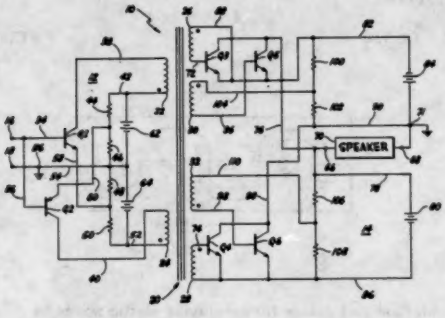
HIGH FIDELITY AUDIO AMPLIFIER

Ronald J. Bakken, 3918 31st Ave. South, Minneapolis, Minn.

Filed June 23, 1971, Ser. No. 64,200
Int. Cl. H03f 3/04
U.S. Cl. 330—16 10 Claims

Included in the amplifier is a driver stage having a pair of opposite conductivity transistors connected in complementary symmetry. A transformer couples the driver stage to the

power stage. The coupling transformer has first and second primary windings, the first primary winding being connected in the collector-emitter circuit of one of the transistors and the second primary winding being connected in the collector-emitter circuit of the other transistor. In the power stage, there



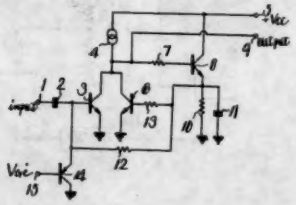
are four identical conductivity transistors. The coupling transformer has four secondary windings with each winding being connected to the base of one of the identical conductivity transistors. The load in the form of a speaker is connected in the collector-emitter circuits of the various identical conductivity transistors.

3,764,931

GAIN CONTROL CIRCUIT

Toshihiko Waku, Yokohama, and Yoshio Ota, Fujisawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 16, 1972, Ser. No. 297,769
Claims priority, application Japan, Oct. 15, 1971, 46/81957
Int. Cl. H03g 3/30; H03f 1/30
U.S. Cl. 330—29 **7 Claims**



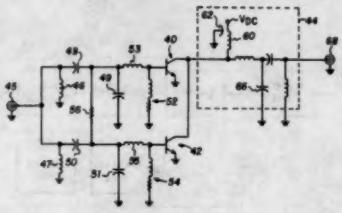
A gain control circuit having a pair of first and second NPN-type transistors whose emitters are grounded and whose collectors are connected with each other and through a constant current source to a DC source. A third NPN-type transistor has its collector connected to the DC source, its emitter connected to the bases of the first and second transistors through separate resistors and also grounded through a resistor connected in parallel with a capacitor, and its base connected to the collector of the first transistor. A PNP-type transistor has its emitter connected to the base of the first transistor and its collector grounded. An input signal is applied to the base of the first transistor and a control signal is applied to the base of the PNP-type transistor.

3,764,932

RF POWER AMPLIFIER

Eugene A. Robinson, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Oct. 10, 1972, Ser. No. 296,388
Int. Cl. H03f 3/04, 3/68
U.S. Cl. 330—30 R **5 Claims**



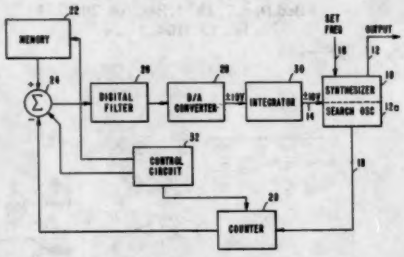
An RF power amplifier comprising first and second bipolar transistors with collector outputs connected directly in parallel. Separate drive circuits are provided for the transistors with a drive balancing resistor connected between the two drive circuits.

3,764,933

CONTROLLED OSCILLATOR SYSTEM WITH A TIME DEPENDENT OUTPUT FREQUENCY

James C. Fletcher, Administrator of the National Aeronautics & Space Administration with respect to an invention of, and Robin A. Winkelstein, La Crescenta, Calif.

Filed Sept. 27, 1972, Ser. No. 292,681
Int. Cl. H03b 3/04, 23/00
U.S. Cl. 331—1 A **8 Claims**



A controlled oscillator system is disclosed for providing an output with a frequency which changes with respect to time and with a phase which is within established phase error limits. The system includes a frequency synthesizer with a symmetrical search oscillator, capable of tuning the output with a range of ±100 Hz about any fixed frequency to which the synthesizer is set. For a tuning range of 200 Hz (±100 Hz) an expanded search oscillator output of a frequency range of 4 MHz (from 1 MHz to 5 MHz) is provided. A counter counts continuously the expanded output cycles and at each of fixed sampling intervals, e.g., every 0.1 second, the count or number accumulated in the counter is read out. The sample number is compared with a theoretical number which should be present in the counter at the particular sampling instant for proper synthesizer's output frequency and phase. Any difference between the numbers is used to generate an error signal which controls the input to the search oscillator to adjust the frequency and/or phase of the synthesizer's output.

3,764,934
LASER APPARATUS AND MIRROR ADJUSTMENT MECHANISM THEREFOR

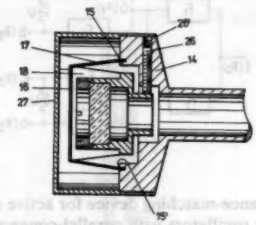
Heinz Schamberger, Munich, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed Mar. 6, 1972, Ser. No. 232,041

Claims priority, application Germany, Mar. 17, 1971, P 21 12 755.9

Int. Cl. H01s 3/08

U.S. Cl. 331—94.5 **11 Claims**



Laser with an optical resonator composed of two or more mirrors. At least one mirror is adjustable. The apparatus for fine adjustment of the mirrors comprises a suspension for the mirror which includes a pair of planar link arrangements, each having four joints, the links essentially forming a hinged, or jointed trapeze. Oppositely located links are inclined at an angle different from zero to one another. The link arrangement is manufactured, for example, from a spring plate, the joints being resiliently bendable. One parallel side of the trapeze carries the mirror. Adjusting screws adjust the alignment of pre-stressed flaps or tongues of the spring plate which form the oppositely located links. The mirror is adjustable through small angles in two mutually perpendicular planes.

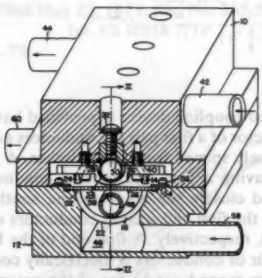
3,764,935
LASER PUMP ENCLOSURE

Robert P. Iorizzo, 901 Nottingham Rd., Baltimore, and Vernon L. Williams, Bonnie Branch Rd., R.F.D. No. 1, Ellicott City, both of Md.

Continuation of Ser. No. 759,411, Sept. 12, 1968, abandoned. This application July 16, 1971, Ser. No. 163,484

Int. Cl. H01s 3/09, 3/02

U.S. Cl. 331—94.5 **5 Claims**



A laser pump enclosure, divided into two substantially equal halves separated by a window with one-half containing the excitation source or pump while the other half contains the laser material. The window separating the two halves of the enclosure provides a suitable seal so that the half containing the laser material is cooled by a circulating liquid while the other half containing the pump is cooled by heat conduction via a heat sink of solid material placed in direct contact with the pump over a predetermined portion of its surface. The heat absorbed by the heat sink is subsequently transferred to the bulk mass of the respective half of the enclosure which in turn includes supplementary circulatory coolant apparatus. The window may additionally allow for still further cooling of the pump by a liquid coolant circulated around the remainder of the pump surface. Also the window, when desirable, may be comprised of a spectral filter element.

3,764,936
LASER ARRANGEMENT FOR CREATING A STABLE PULSE WITH SHORT PULSE SPACINGS

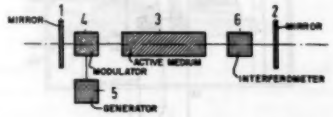
Peter Baues, Krailling, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 19, 1972, Ser. No. 245,326

Claims priority, application Germany, June 25, 1971, P 21 31 615.4

Int. Cl. H01s 3/10

U.S. Cl. 331—94.5 **10 Claims**



A laser arrangement for creating a stable pulse with short pulse spacings, comprising an active laser medium, a modulator, a mode selector and an optical resonator, wherein the mode selector is an optical filter for a mode group.

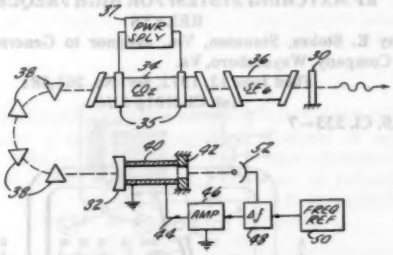
3,764,937
FREQUENCY CONTROLLED, PASSIVELY Q-SWITCH LASER

Michael L. Skolnick, West Hartford, and Carl J. Buczek, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 26, 1972, Ser. No. 247,679

Int. Cl. H01s 3/11

U.S. Cl. 331—94.5 **6 Claims**



A CO_2 laser gain cell is optically in series with an SF_6 low pressure-saturable absorber cell in a dispersive laser cavity. The optical length, and therefore the frequency of resonance of the cavity, is controlled by a piezoelectric transducer affixed to one of the cavity resonating mirrors, in response to a control voltage applied thereto, the nature of which varies in dependence upon the utility to which the device is put. In one embodiment, the PRF of the output is compared with a reference, and the resulting control voltage maintains a constant carrier frequency (such as a specific point on the P20 line at 10.6 microns), which in turn maintains a constant PRF due to the relationship between the laser gain characteristic and the saturable absorber characteristic. Rapidly changing

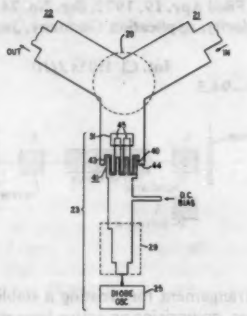
PRF is achieved by applying a staircase voltage to the piezoelectric transducer. Carrier frequency sweeping, at different PRFs, is achieved by applying a sawtooth voltage to the piezoelectric transducer.

3,764,938

RESONANCE SUPPRESSION IN INTERDIGITAL CAPACITORS USEFUL AS DC BIAS BREAKS IN DIODE OSCILLATOR CIRCUITS

Clare Earl Barnes, Bethlehem, Pa., assignor to Bell-Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 28, 1972, Ser. No. 283,983
Int. Cl. H01g 1/16; H03b 7/14
U.S. Cl. 331—96 **11 Claims**



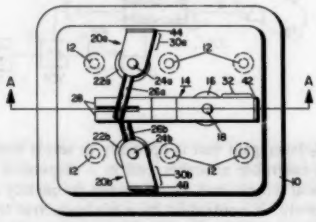
A modified stripline interdigital capacitor has slots coupled into the capacitor gap. These slots provide reactive loading to the slot transmission line formed by the gap. They are positioned and dimensioned to shift the frequency of the slot line resonance so that it is out of a selected frequency band without affecting the capacitance of the structure, and a resistive film applied over the loading slots serves to damp the shifted slot resonances. This interdigital structure may be used in a diode oscillator circuit to provide a dc block for isolating the input and output from the diode bias.

3,764,939

RF MATCHING SYSTEM FOR HIGH FREQUENCY RELAYS

Roy E. Stokes, Staunton, Va., assignor to General Electric Company, Waynesboro, Va.

Filed June 12, 1972, Ser. No. 261,581
Int. Cl. H01p 1/10
U.S. Cl. 333—7 **8 Claims**



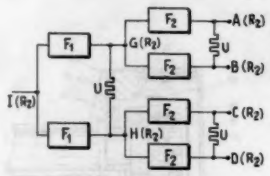
A radio frequency relay circuit having movable and/or fixed contacts positioned above a conductive housing member, the contacts having adjustable tabs extending generally parallel to the housing member which enable the relay circuit to be tuned to the characteristic impedance of a transmission line to which the radio frequency relay is connected.

3,764,940

ADMITTANCE-MATCHING NETWORK FOR THE PARALLEL CONNECTION OF WIDE-BAND ACTIVE POWER ELEMENTS

Claude Vergnolle, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 27, 1972, Ser. No. 238,555
Claims priority, application France, Apr. 13, 1971, 7112965
Int. Cl. H03h 7/02, 7/38
U.S. Cl. 333—8 **4 Claims**



An admittance-matching device for active elements such as amplifiers or oscillators with parallel-connected transistors is intended for operation in the high-frequency range for example at frequencies in the order of one gigacycle per second.

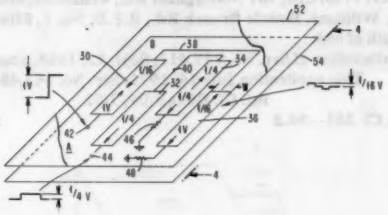
A network of identical admittance transformers with p stages (F_1 for the first stage, F_2 for the second), is connected to a single pair of terminals of the circuit (network and active elements) on the one hand, and on the other hand to the pairs of terminals of the active elements. Each admittance transformer presents at the single pair of terminals an admittance lower than or equal to the admittance of the active elements.

3,764,941

STRIPLINE DIRECTIONAL COUPLING DEVICE

Howard H. Nick, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,298
Int. Cl. H01p 5/14, 3/08
U.S. Cl. 333—10 **8 Claims**



A directional coupling device is provided having a first and second conductor of a first pair of conductors extending parallel to and closely spaced from one another. A second pair of conductors having a first and second conductor extending parallel to and closely spaced from one another are spaced laterally from the first and second conductors of the first pair of conductors, respectively. A first end of the first conductor of the first pair of conductors is electrically connected to the first end of the second conductor of the second pair of conductors. Also, the first end of the first conductor of the second pair of conductors is electrically connected to a first end of the second conductor of the first pair of conductors. The first and the second conductors of the first pair of conductors at the second end thereof respectively include an input and an output means. The second end of each of the first and second conductors of the second pair of conductors includes a terminating means so that electrical pulses arriving thereat will be terminated.

3,764,942

ARRANGEMENT FOR WIDE BAND COUPLING OF A COAXIAL LINE TO A HOLLOW CONDUCTOR

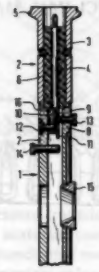
Siegfried Keim, and Eckart Schmid, both of Muenchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 15, 1972, Ser. No. 280,841

Claims priority, application Germany, Aug. 26, 1971, P 21 42 863.7

Int. Cl. H01p 5/08

U.S. Cl. 333—33 10 Claims



An arrangement for wide band inductive coupling of a coaxial line to a hollow conductor, by means of a coupling loop having a first leg extending in axial direction from the inner conductor of the coaxial line into the hollow conductor, and a second leg extending transversely from the first leg to the wall of the hollow conductor, with the free end portion of such first leg projecting beyond the second leg into the hollow conductor, at least two adjustable pins being provided for determining the coupling characteristics which pins extend inwardly from the hollow conductor sidewall, one of such pins being disposed opposite the first leg and extending inwardly toward the latter, while a second of such pins is disposed adjacent to but axially spaced from the projecting portion of the first leg.

3,764,943

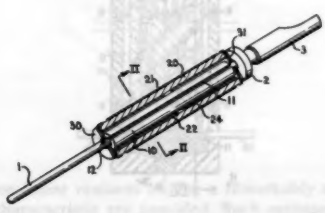
FILTER CONTACT FOR AN ELECTRICAL CONNECTOR

Jack B. Fort, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 22, 1972, Ser. No. 255,371

Int. Cl. H01h 7/14

U.S. Cl. 333—79 13 Claims



An electrical connector assembly having one or more filter contacts therein for eliminating undesired high frequency currents. The filter contacts are designed so that rated currents can be applied without degradation of the attentuation performance due to saturation of the inductive element of the filter.

3,764,944

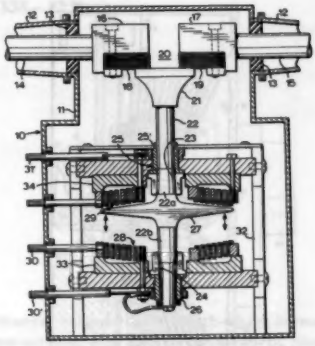
SPIRAL MOTOR COIL

Clifford C. Erven, 32 Swanhurst Blvd., Streetsville, Ontario, Canada

Filed July 6, 1972, Ser. No. 269,471

Int. Cl. H01h

U.S. Cl. 335—2 10 Claims



An electromagnetic coil comprises a rigid bimetallic plate of substantially uniform thickness and spiral configuration, the axis of the spiral extending in the direction of the thickness of the plate, the plate consisting of a first metal component and a second metal component laminated thereto, the plate having inner and outer convolutions provided with means for securing said convolutions to a rigid support structure, and means providing terminal connections to the coil.

3,764,945

ELECTRICAL SWITCH DEVICES

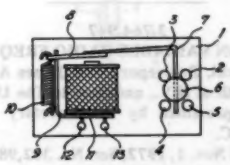
Roger Daniel Lacrampe, and Thierry Arnaud Henri Lacrampe, both of Paris, France, assignors to Sam Marcel Braun, Paris, France, a part interest

Filed Feb. 2, 1972, Ser. No. 222,955

Claims priority, application France, Feb. 19, 1971, 7105665

Int. Cl. H01h 50/54

U.S. Cl. 335—187 6 Claims



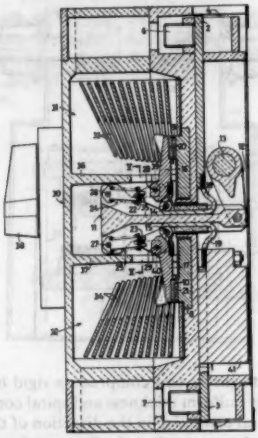
A switch device having at least two stationary contacts for connection in an electrical circuit and a movable contact or conductor element of spherical or other shape of circular cross-section such as a disc or cylinder. A movable blade extending between the stationary contacts is formed with a hole housing the element which is free to rotate about is centre axis. Movement of the blade in one direction brings the element into contact with both stationary contacts to make the circuit which is broken by the blade moving the element in the opposite direction. The element is rotated by the making and breaking movements so that deterioration of the element's curved periphery by wear and spark discharge is substantially prevented as different parts of the periphery come successively into contact with the stationary contacts.

3,764,946

CURRENT-LIMITING ELECTRIC SWITCH

Angelo Mostosi, Bergamo, Italy, assignor to S.A.C.E. S.p.A. Construzioni Elettromeccaniche, Bergamo, Italy

Filed Feb. 2, 1972, Ser. No. 222,953
Claims priority, application Italy, Feb. 2, 1971, 20099 A/71
Int. Cl. H01h 77/10
U.S. Cl. 335—195 9 Claims



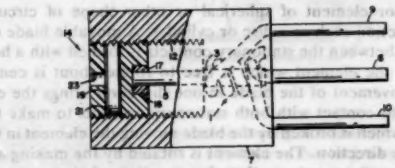
A current-limiting electric switch is disclosed, of the kind having at least one release per pole, each release comprising two contacts carried by respective supporting members, said contacts being electrically connected to a feed and a load terminal through a current path of which said supporting members form, when the contacts are closed, two parallel branches through which currents of opposite sign flow, so that a current increase beyond a preselected limit produces in said two branches electrodynamic repulsion forces to overcome the bias of resilient supporting members and to cause the supporting members to be set apart for separating the contacts, the improvement consisting in the fact that said parallel branches are a part of a closed loop which is made up by said current path in correspondence with each release. The switch according to this invention permits to construct apparatus having shorter working times than those of the prior art and a more reliable operability.

3,764,947

HIGH-PRECISION VARIABLE RADIO FREQUENCY COIL

Roger W. Mazzochi, Bridgeport, and James A. Postlethwait, Fayetteville, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1972, Ser. No. 302,980
Int. Cl. H01f 21/06
U.S. Cl. 336—136 1 Claim



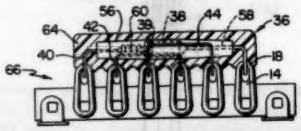
A three turn coil cast in an epoxy casting which has on one end fine threads to accept a screw having a hole radially therein. In this hole is a compressed silicone rubber tension rod. A tuning core is bound to the screw with a silicone adhesive. A dummy material is also cast in the epoxy resin.

3,764,948

THERMAL LIMITER FOR ONE OR MORE ELECTRICAL CIRCUITS AND METHOD OF MAKING THE SAME

Emil Robert Piasko, Dayton, Ohio, assignor to Micro Devices Corp., Dayton, Ohio

Continuation-in-part of Ser. No. 101,848, Dec. 28, 1970, Pat. No. 3,649,942, which is a continuation-in-part of Ser. No. 62,369, Aug. 10, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,927. The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.
Int. Cl. H01h 85/02
U.S. Cl. 337—163 20 Claims



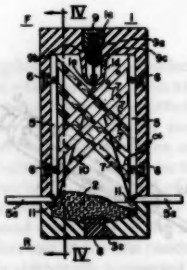
This invention relates to a thermal limiter which can be used to limit one or more electrical circuits, such as multiple circuits in which one of the circuits is a primary circuit and the other circuits are secondary circuits energized or controlled by the primary circuit. The limiter of this invention is a unitary construction which can be connected to the primary and secondary circuits to control the same. A new method of making the limiter is included in this invention. This invention can be used in combination with a transformer for a television set in combination with its primary and secondary circuits, in combination with an air conditioning system, such as for automobiles, or in combination with other devices, as desired.

3,764,949

POLYPHASE FUSE WITH BLOWN FUSE INDICATOR IN EACH PHASE

Kenneth W. Swain, Box 37, Hampton Falls, N.H., and Keith W. Klein, 18 Walker Drive, Simsburg, Conn., assignors to The Chase-Shawmut Company, Newburyport, Mass. by said Swain; General Electric Company, by said Klein

Filed Oct. 28, 1971, Ser. No. 193,596
Int. Cl. H01h 85/30
U.S. Cl. 337—244 5 Claims



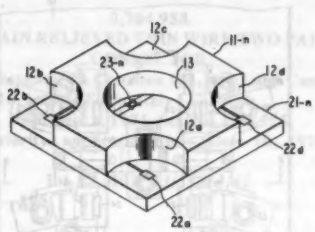
A fuse, and more particularly a polyphase fuse, having a casing, or housing of insulating material is provided with a blown fuse indicator housed in a sub-housing which is an integral part of the casing, or housing proper being formed by an internal projection of the front wall of the latter.

3,764,950

METHODS FOR MAKING SEMICONDUCTOR PRESSURE TRANSDUCERS AND THE RESULTING STRUCTURES

Perry S. Wallia, Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed July 17, 1972, Ser. No. 272,247
Int. Cl. G01l 1/22
U.S. Cl. 338—2 13 Claims



A semiconductor pressure transducer comprises a first portion of semiconductor material containing therein a hole, a second portion of semiconductor material placed over the top of said hole and strain sensitive electrical components formed on a selected surface of said first or said second portions of semiconductor material so as to be responsive to variations in pressures incident upon said transducer. A plurality of such semiconductor transducers are formed using semiconductor processing techniques by forming a plurality of holes in a first wafer of semiconductor material, forming a plurality of strain sensitive electrical components on a selected surface of either said first wafer or a second wafer of semiconductor material, then joining the first and second wafers of semiconductor material in a controlled pressure environment so as to seal said plurality of holes and finally separating the transducers from the composite structure.

3,764,951

NON-LINEAR RESISTORS

Kan-ichi Tachibana; Michihiro Nishioka, and Mikiya Ono, all of Yahata-ku, Kitakyushu-shi, Fufukaoka-ken, Japan, assignors to Mitsubishi Mining & Cement Company, Ltd., Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 327,175
Claims priority, application Japan, Feb. 16, 1972, 47/16303
Int. Cl. H01c 7/10
U.S. Cl. 338—20 2 Claims

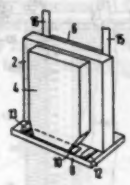
New non-linear resistors having a remarkably stable volt-ampere characteristic are provided. Such resistors comprise several sintered wafers superposed, said sintered wafer consisting of iron oxide as the main component and the respective prescribed quantities of calcium oxide, rare earth oxide and the like, and electrodes applied to opposite surfaces of said several sintered wafers superposed and are based on utilization of the property of the contact surfaces between said several sintered wafers superposed.

3,764,952

GALVANOMAGNETIC RESISTANCE DEVICE

Paul Hini, and Adolf Albrecht, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munchen, Germany

Filed Aug. 18, 1971, Ser. No. 172,782
Claims priority, application Germany, Aug. 27, 1970, P 20 42 491.5
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 25 Claims



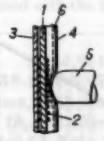
A permanent magnet has a length which is small compared to its cross-section. The yoke of the magnetic biasing circuit is in direct contact with one narrow side of the magnet. The control flux ϕ_s and the bias flux ϕ_v are decoupled from each other by magnetic saturation of the pole piece which is not adjacent to the field plate. The resultant galvanomagnetic resistance device has a sensitivity which is so great that even stray fields may be detected.

3,764,953

RHEOSTATS

Gunter Lehnert, Russelsheim, Main, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 18, 1972, Ser. No. 290,266
Int. Cl. H01c 5/00
U.S. Cl. 338—154 7 Claims



An encapsulated rheostat, particularly for data transmitters of filling level indicators in motor vehicle fuel tanks, has its resistive element enveloped in a resilient sheet of plastics material. A conductive inner layer is carried by the plastics sheet, and an adjustable contact pin presses against the sheet to establish localised contact between the conductive inner layer and the resistive element. The value of the electrical resistance of the rheostat is thereby variable by adjustment of the position of the contact pin. Air or other gas, or a liquid, confined within the encapsulating resilient plastics sheet tends to separate the resistive element and the conductive inner layer except at the region of localised contact provided by the adjustable contact pin.

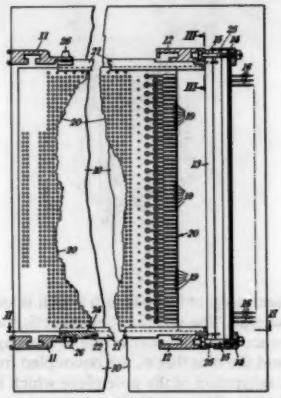
The resistive element may be of wire-wound construction, or may be resistive inner layer, possibly of strip form, carried by the plastics sheet.

3,764,954

MOUNTING FOR CIRCUIT BOARDS

Derek Saunders, Wimborne, England, assignor to Vero Electronics Limited, Eastleigh, England

Filed Apr. 27, 1972, Ser. No. 248,039
Claims priority, application Great Britain, Apr. 28, 1971, 11,851/71
Int. Cl. H01r 13/62
U.S. Cl. 339—65 5 Claims



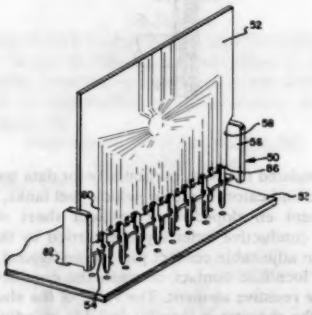
Apparatus for mounting circuit boards comprising an edge connector having a plurality of cavities containing contacts to mate with plug-in contacts on the end of a circuit board and a pair of opposed guide channels for receiving the edges of the circuit board, each guide channel extending at right angles to the edge connector and having at its end a tongue fitted into and located both vertically and horizontally by vacant contact cavities in the edge connector.

3,764,955

CONNECTING AND MOUNTING MEANS FOR SUBSTRATES

John Ambrose Ward, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 17, 1972, Ser. No. 254,196
Int. Cl. H05k 1/07; H01r 13/62
U.S. Cl. 339—65 3 Claims



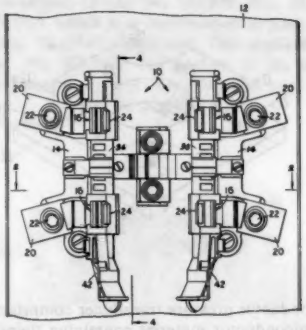
Connecting and mounting means for substrates comprises an elongated mounting bar having connecting devices mounted therein at spaced intervals. The connecting devices have aligned spring receptacles which receive and support the substrate and have posts which are adapted to enter holes in a printed circuit board.

3,764,956

ELECTRIC METER SOCKET

Alexander R. Norden, New York, N.Y., assignor to General Switch Company, Great Neck, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,124
Int. Cl. H01r 13/62; H02b 9/00
U.S. Cl. 339—74 R 10 Claims



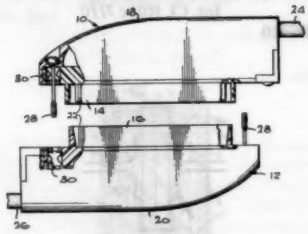
An electric watt-hour meter socket which is provided with means for by-passing the meter-socket contact prior to removal of the meter, thus enabling current to be supplied when necessary, and when the interruption of the current supply by removal of the meter, would otherwise occur. Also, provision is made to loosen the socket contacts when the current by-pass is activated, thus facilitating disengagement of the meter contact and the removal of the meter, and to tighten the socket contacts when the meter is restored and the by-pass deactivated. The invention resides in the simplicity of the means provided for accomplishing these operations.

3,764,957

ELECTRICAL CONNECTOR

Ralph T. Iversen, Granada Hills, Calif., assignor to Viking Industries, Inc., Chatsworth, Calif.

Filed Dec. 17, 1971, Ser. No. 209,323
Int. Cl. H01r 13/54, 13/64
U.S. Cl. 339—92 R 7 Claims



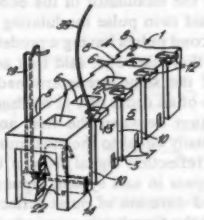
Apparatus for enabling the rapid and reliable connection and disconnection of plug type connectors and their low cost manufacture, including a nut member that indicates when a screw is fully tightened, frames that facilitate unplugging in a commonly practiced though officially unrecognized manner, and contact elements shaped for accurate location in the frames. The nut member has a thread-engaging lip initially angled to extend away from the other connector frame, so that as a screw from the other frame becomes fully tightened the lip deforms and thereby suddenly increases screw-tightening re-

sistance that signals the repairman to stop turning the screw. The female frame of a connector set has end walls that are tapered to permit disconnection of the frames by tilting them away from one another without binding. The recesses in each frame that receive tiny contact elements, have inwardly extending flanges near the tops of the recesses, and each resilient contact element has a wide lower portion biased upwardly against the flanges and a narrower upper portion passing between and beyond the flanges.

3,764,958
STRAIN RELIEVED THIN WIRE TWO PART CONNECTOR

Wladimiro Teagno, Via Cimahue 1/A, and Luigi Campari, Via Vagnone 16, both of Turin, Italy

Filed Dec. 3, 1971, Ser. No. 204,525
Claims priority, application Italy, Dec. 10, 1970, 32865 A/70
Int. Cl. H01r *13/58, 13/42*
U.S. Cl. 339—105 **5 Claims**

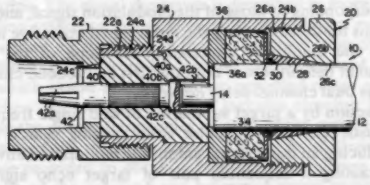


The invention is concerned with relieving connections formed with fine wires (e.g., of 0.08 mm diameter), of strain caused by an axial tension imposed on the wires during handling. To achieve this, the wire is wound around a portion of insulating body after connection to a tab carried by the body, and is retained in position around the body by inserting the portion in a trough-like portion formed on another insulating body. The one insulating body is provided with a socket retaining a contact member electrically connected to the tab and the other is provided with a post of conductive material which is inserted into the socket to make electrical connection to the contact member on insertion of the one body into the other body.

3,764,959
UNIVERSAL COAXIAL CABLE CONNECTOR

Joseph R. Toma, Colonia, and Oliver C. Johnson, Irvington, both of N.J., assignors to Astrolab, Inc., Linden, N.J.

Filed July 18, 1972, Ser. No. 272,798
Int. Cl. H01r *17/18*
U.S. Cl. 339—177 R **20 Claims**

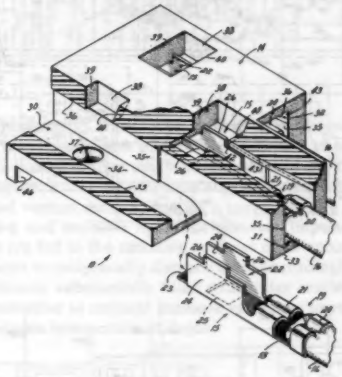


There is disclosed a coaxial cable connector for use with the same nominal size cables of different manufacturers. Although the actual outer diameters of such cables may vary by as much as 10%, the connector includes in the conical bore of a retaining nut a slotted tapered sealing gland whose fingers, when the connector is tightened, are bent inwardly to tightly grip the outer conductor of the cable. The connector also includes a wire mesh ring which, when compressed in the axial direction, expands radially both inwardly and outwardly so as to form a tight mechanical fit and establish good electrical contact and radiation shielding between the outer conductor of the cable and the body of the connector.

3,764,960
CLUSTER ASSEMBLY AND CONNECTOR CLIP THEREFOR

Henry H. Heimbrock, Cincinnati, Ohio, assignor to Van Products Incorporated, Cincinnati, Ohio

Filed May 25, 1972, Ser. No. 256,826
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **6 Claims**

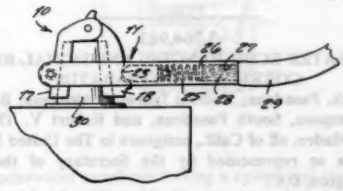


A cluster assembly having a block having three longitudinal passageways therethrough, said block receiving three connector clips. The connector clips each include, as a pin-receiving receptacle, a bottom wall having a hole in it which is slightly undersized compared to the pin which it receives and two side walls projecting perpendicularly with respect to the bottom wall. The assembly block has at least one hole communicating with each passageway and abutment means on the block and clip respectively to retain the clip within the passageway with the hole in the clip aligned with the hole in the block.

3,764,961
SNAP-P CONNECTOR

Omer Poitras, Fort Nelson, B. C., Canada

Filed Feb. 14, 1972, Ser. No. 225,728
Int. Cl. H01r *7/06*
U.S. Cl. 339—238 **2 Claims**



A storage battery terminal post connector of improved design so to be quickly and easily snapped on or off the terminal post; the device consisting of a pair of levers which are

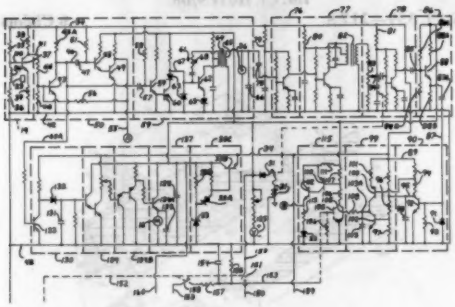
pivoted together at their one ends so that the opposite ends of the levers which form jaws can be brought together on opposite sides of the battery terminal post, the levers being supported between forked legs of a lever barrel connected to the end of a battery cable, and a compression coil spring normally urging the levers so that the jaws thereof firmly grasp the battery terminal post.

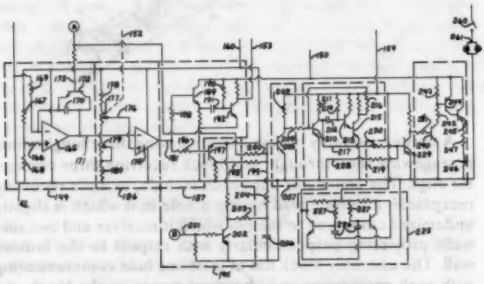
3,764,962

CIRCUIT FOR WATER DEPTH METER

Charles F. Bartel, Jr., Rosemount, Minn., assignor to Vexilar, Inc., Minneapolis, Minn.

Filed Jan. 10, 1972, Ser. No. 216,545
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R **13 Claims**





A depth meter for use in water, which has a rotating disc carrying a light emitting diode that lights up to give depth indications. The rotating disc also carries a magnet which is used to generate a signal to initiate transmission of a high frequency signal through a crystal. The crystal receives any returned signal reflected from the bottom or an object in the water. The reflected signal is amplified, and a pulse discrimination circuit is used to determine if the amplified signal is acceptable. An acceptable signal trips a power circuit to a light emitting diode to indicate the depth of the bottom or object causing the reflected signal.

3,764,963

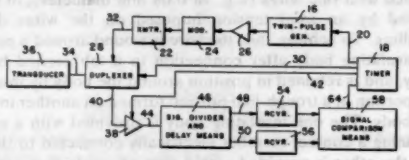
UNDERWATER ECHO-RANGING AND SIGNAL-RETURN CORRELATION APPARATUS

Lloyd Beck, Pasadena; Yoshiya Igarashi, Altadena; Benjamin L. Thompson, South Pasadena, and Robert V. Thurman, Sierra Madre, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1964, Ser. No. 415,822
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R **2 Claims**

1. In an acoustic echo ranging system for detection of the presence of a target submarine and of the type which transmits a twin pulse echo ranging search signal consisting of first and second pulses having a predetermined interval of time separation therebetween; and in which the input signal received during a listening period is fed through a dual channel delay network for splitting a signal into two parallel channels and introducing a relative delay therebetween, said dual channel delay network comprising first and second parallel channels with the second channel adapted to provide a fixed delay in the transmission of the input signal therethrough which exceeds the time for transmission of the input signal through said first channel by said predetermined interval of separation betweeen the first and second pulses of the twin pulse echo ranging search signal; and in which the outputs of said first and second parallel channels are compared to detect coincidence of target relfection of the second of the twin pulses from a target in the output of the first channel with reflection of the first of the twin pulses from the same target in the output of the second channel; said echo ranging system being operative to repetitively transmit the twin pulse search signal at regular time intervals of the order of 1–2 seconds; the improvements in combination comprising:

1. means for generating a twin pulse modulation signal for application to the modulator of the echo ranging system transmitter, said twin pulse modulating signal consisting of first and second pulses having a predetermined interval of separation therebetween, said first and second pulses both being of the same predetermined pulse duration, having a value of an order of 1–2 milliseconds, said interval of separation between the first and second pulses being substantially equal to the maximum expected duration of pulse reflection signal from a target submarine which may appear in said system input signal, said maximum expected duration of pulse reflection signal being determined by the time it takes an individual pulse of the twin pulse search signal to transverse the length of a target submarine oriented substantially longitudinally along the line-of-sight from the echo ranging system, the magnitude of the maximum expected duration of pulse reflection being of an order including the value 70 milliseconds,



2. a transmitter and an associated modulator, said transmitter and modulator being operable to transmit a single frequency acoustic signal in response to said twin pulse modulation signal applied to the modulator, whereby said twin pulse modulation signal causes the system to transmit a single frequency acoustic energy twin pulse echo ranging search signal having its first and second pulses of a single frequency of acoustic energy and having pulse duration and interval of time separation characteristics corresponding to those of the modulation signal, and
3. means for demodulating the input signal operative to provide the amplitude modulation envelope of the input signal at the outputs of both the first and second channels of the dual channel delay network,
4. reflection by a target submarine of said single frequency acoustic energy twin pulse echo ranging search signal producing an input signal amplitude modulation envelope containing a sequential pair of target echo signature signals separated by said predetermined time, the individual target echo signals of said sequential pair being correlated relative to one another to a high degree in both time and amplitude of component perturbation as the result of the reflection mechanism of the twin pulses of a single frequency of acoustic energy, said high degree of

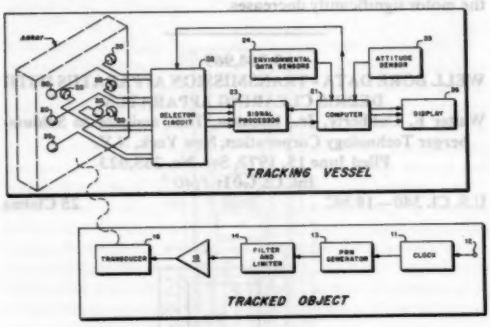
correlation having a magnitude of correlation coefficient R, of an order including the range of values 0.8 to 0.9, whereby system selectivity in detection of coincidence of the first of the sequential pair of target echo signature signals at the output of the first channel with the second of the sequential pair of target echo signature signals at the output of the second channel is enhanced.

3,764,964

UNDERWATER TRACKING SYSTEM

Ralph M. Seeley, Jr., Port Matilda, and Francis P. Finlon, State College, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 20, 1967, Ser. No. 615,038
Int. Cl. G01s 5/18, 3/80
U.S. Cl. 340—6 R 9 Claims



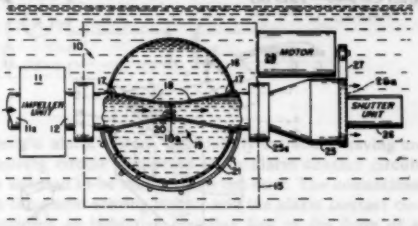
The apparatus disclosed herein is a submarine based tracking system for tracking one or more independently movable underwater objects each equipped with system synchronized apparatus for transmitting underwater a PRN (pseudo random noise) signal characteristic of that particular object. The submarine is equipped with an array of precisely located hydrophones for sensing the PRN signals, a signal processor, a computer, and a display. The computer is programmed to direct the outputs of both a pair of selected vertically spaced hydrophones and a pair of selected horizontally spaced hydrophones to the signal processor which, in turn, provides to the computer signals indicative of the relative times of reception by the selected hydrophones of the PRN signal emanating from the tracked object. The computer utilizes the aboveindicated reception time indicia to ascertain and provide to the display signals indicative of the spherical coordinates of the location of the tracked object relative to the submarine. The signal processor is described in more detail as including reference signal generators providing a number of PRN signals each similar to that transmitted from the object and differing therefrom by a respective anticipated Doppler shift which would occur within an expected range of closing velocities. The processor further includes circuitry for down shifting the center frequencies of each of the received signals and each of the reference signals. Digital serial cross correlators are provided to obtain a band-pass correlation function for each of the received and reference signal combinations. The processor also includes circuitry for shifting the center frequencies of the carriers of the band-pass correlation functions upwardly to the level of the center frequencies of the hydrophone sensed PRN signals and circuitry for obtaining therefrom the reception time indicia indicated above as being provided to the computer.

3,764,965

PROJECTOR OF ACOUSTIC ENERGY

William B. McLean, and Sidney A. Christie, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 16, 1972, Ser. No. 263,499
Int. Cl. H04b 13/00
U.S. Cl. 340—12 6 Claims



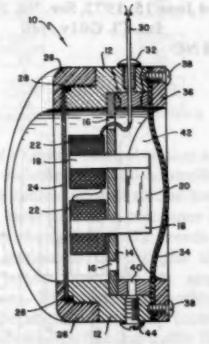
A hydroacoustic transducer having a motor-pump unit drawing in ambient water impells the water to a chamber and through a rotary shutter unit which modulates the flow in an on-off sequence. The on-off modulated flow passes through an interposed venturi section creating a corresponding sequence of positive and negative hydraulic pressure impulses. These impulses are fed to the radiating surfaces of an acoustic-energy projector to reciprocally displace them accordingly. Having the transducer substantially filled with water renders it relatively insensitive to ambient pressure variations to ensure reliable operation irrespective of depth.

3,764,966

UNDERWATER EARPHONE

Louis A. Abbagnaro, Huntington, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 8, 1972, Ser. No. 232,800
Int. Cl. H04r 13/00
U.S. Cl. 340—14 5 Claims

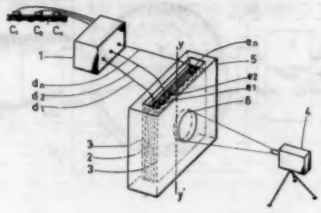


An underwater earphone having a cylindrical casing sealed at one end by the vibratable diaphragm and at the other end by a flexible rubber diaphragm. The casing, including pole pieces and energizing coils is filled with silicone oil providing damping. This construction equalizes the pressure on either side of the vibratable diaphragm and prevents the ingress of water.

3,764,967
NEW METHOD FOR THE COMPOSITION OF RECORDINGS AND DEVICE FOR CARRYING OUT THE SAME

Gerard Grau, Paris, and Andre Fontanel, Asnieres, both of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, France

Filed May 19, 1970, Ser. No. 38,798
Claims priority, application France, May 19, 1969, 6916504
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 SS **24 Claims**

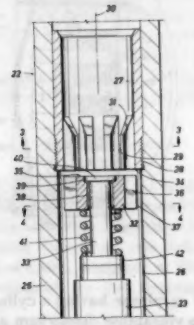


Method for the composition of seismic recordings whereby images of transmission and/or reception points with respect to sub-surface mirrors and diffracting points can be restored at their actual location in sub-surface formations, comprising transmitting waves from said transmission points through the surveyed zone, recording them after diffraction or reflection at said reception points, forming a restoration network of arbitrarily selected points of said surveyed zone and determining the travel time from a transmission point to a reception point via one of said points of the network, selecting from each record trace a sample corresponding to said travel time, combining said samples in a unitary value which is assigned to the corresponding point of the network, and identifying the position of the image points and diffracting points at the locations of the points of the network to which have been assigned the highest values.

3,764,968
WELL BORE DATA TRANSMISSION APPARATUS WITH DEBRIS CLEARING APPARATUS

Ronald A. Anderson, Seabrook, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 263,022
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 NC **29 Claims**

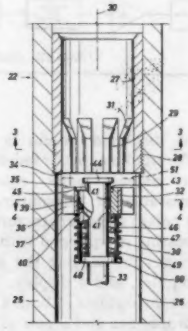


In the representative embodiment of the apparatus of the present invention disclosed herein, a first ported or grooved cylindrical member is mounted within a drill string for directing drilling fluids flowing through the apparatus along one or more selected flow paths toward a second ported or grooved cylindrical member which is coaxially arranged in the drill string adjacent to the first member for rotation in a transverse plane cutting the flow paths to cyclically obstruct these flow paths. An electric motor is cooperatively coupled by a shaft to the rotatable member for driving the member at a selected speed to develop an acoustic signal of a desired frequency as the flow paths are momentarily obstructed at periodic intervals. To prevent jamming of the rotating member should debris carried in the circulating drilling fluid become lodged between the two signal-producing members, the rotating member is slidably mounted on the shaft to move away from the fixed member in response to a significant increase of the pressure differential across the two members as might occur by an accumulation of debris or the like therebetween tending to at least slow the rotating member. Biasing means maintain the rotating member in its normal position as well as restore the rotating member to its normal operating position adjacent to the fixed member once the debris has been cleared from between the signal-producing members by the continued flow of the drilling fluid. Control means are also provided for alternately reversing the motor whenever the rotational speed of the motor significantly decreases.

3,764,969
WELL BORE DATA - TRANSMISSION APPARATUS WITH DEBRIS CLEARING APPARATUS

Walter E. Cubberly, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 263,023
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 NC **25 Claims**



In the representative embodiment of the apparatus of the present invention disclosed herein, a first ported or grooved cylindrical member is coaxially mounted within a drill string for directing drilling fluids flowing through the apparatus along one or more selected flow paths toward a second ported or grooved cylindrical member which is coaxially mounted in the drill string adjacent to the first member for rotation in a transverse plane cutting the flow paths to cyclically obstruct these flow paths. An electric motor is cooperatively coupled by a shaft to the rotatable member for driving the first member at a selected speed for developing an acoustic signal of a desired frequency as the flow paths are momentarily obstructed at periodic intervals. To prevent jamming of the rotating member which would otherwise occur should debris carried in the circulating drilling fluid become lodged between the two signal-producing members, the rotating member is cooperatively mounted on the motor shaft to move away from the fixed member either in response to a significant increase of the pressure differential across the two members or in response to a significant increase in rotative torque as might

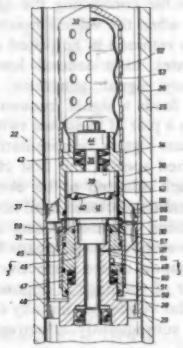
occur by an accumulation of debris or the like between the two members tending to at least slow the rotating member. Biasing means are further provided to maintain the rotating member in its normal position as well as to restore the rotating member to its normal operating position adjacent to the second member once the debris has been cleared from between the signal-producing members by the continued flow of the drilling fluid.

3,764,970

WELL BORE DATA-TRANSMISSION APPARATUS WITH DEBRIS CLEARING APPARATUS

Kenneth G. Manning, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 263,024
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 NC **27 Claims**



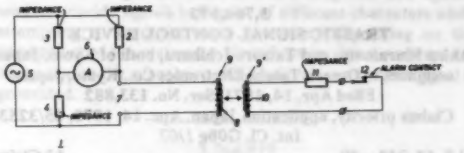
In the representative embodiment of the apparatus of the present invention disclosed herein, a first ported or grooved cylindrical member is coaxially disposed within a drill string for directing drilling fluids flowing through the apparatus along one or more selected flow paths through a second ported or grooved cylindrical member which is coaxially arranged in the drill string adjacent to the first member for rotation in a transverse plane cutting the flow paths to cyclically obstruct these flow paths. An electric motor is cooperatively coupled by a shaft to the rotatable member for driving this member at a selected speed for developing an acoustic signal of a desired frequency as the flow paths are momentarily obstructed at periodic intervals. To prevent jamming of the flow-controlling members which would otherwise occur should debris carried in the circulating drilling fluid become lodged therebetween, the rotating member is cooperatively coupled to the motor shaft to move away from the other member in response to significant increase in the torque required to drive the rotating member. Moreover, upon an increase of the pressure differential across the two members as might occur by an accumulation of debris or the like between the two members tending to at least slow the rotating member, the other member is arranged to move away from the rotating member. Biasing means are respectively provided to maintain the flow-controlling members in their normal positions as well as to restore the two members to their normal operating positions adjacent to one another once the debris has been cleared from between the members by the continued flow of the drilling fluid.

3,764,971

ELECTRIC ALARM DEVICE

Gosta Lennart Brobeck, Tantogatan 41, Stockholm, Sweden

Filed Aug. 19, 1971, Ser. No. 173,220
Int. Cl. G08b *19/00, 13/24*
U.S. Cl. 340—29 **9 Claims**



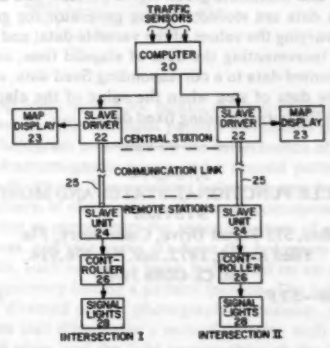
An electric alarm system, particularly for boats, having an alarm sensing circuit connected to an alarm contact circuit which is adapted to be mounted on the boat. The connection between the alarm sensing circuit and the alarm contact circuit comprises an inductive coupling link in the form of a transformer having primary and secondary windings which are mechanically detachable from each other.

3,764,972

CENTRAL TRAFFIC SIGNAL CONTROL

Gregory Siklos, Bronx, and James B. Rudden, New York, both of N.Y., assignors to The Marbelite Company, Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 878,762, Nov. 21, 1969, Pat. No. 3,670,302. This application Mar. 2, 1971, Ser. No. 120,254
Int. Cl. G08g *1/08*
U.S. Cl. 340—35 **18 Claims**



There is disclosed a central control station and a plurality of local stations each including a signal controller responsive to commands from the central control station for controlling the signal lights at each local station. A computer at a central control station monitors changes in traffic trends and can send a signal to a local station to control the signal controller sequence at any intersection with an appropriate offset between intersections. The system smoothly changes from local (isolated) operation to remote (computer control) operation without adversely effecting traffic flow. The central control station includes a slave driver associated with each local station. Each slave driver is connected over a two-wire telephone type line to a corresponding slave unit which in turn is coupled to the signal controller associated with that local station. In a non-actuated system with the signal controller of the local station at its rest or dwell position, the computer can issue a hold command that is transmitted by the slave driver over the two-wire line to the slave unit. This command changes control from local to remote. Thereafter, the com-

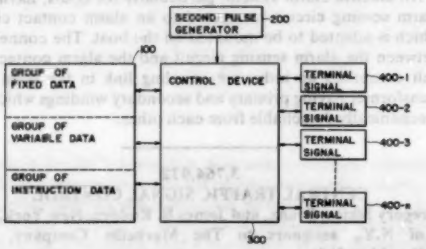
puter may issue an advance command that moves the signal controller to its next position. The advancement of the controller is sensed by the slave unit which in turn transmits a status command to the slave driver and thence to the computer indicating that the controller did, in fact, advance. If no status command is received the intersection is dropped by the computer and returns to local operation.

3,764,973

TRAFFIC SIGNAL CONTROL DEVICE

Akira Muramatu, and Tatsuro Ichihara, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 14, 1971, Ser. No. 133,882
Claims priority, application Japan, Apr. 14, 1970, 45/32537
Int. Cl. G08g *1/07*
U.S. Cl. 340—40 **13 Claims**



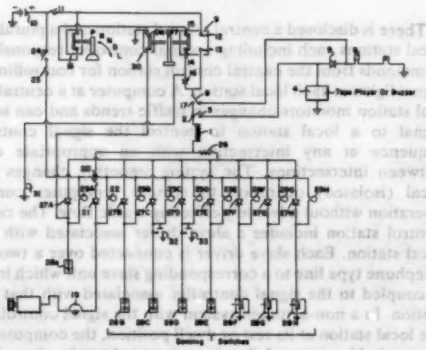
A traffic signal control device for applying signals for switching signals at a multiplicity of intersections. The traffic signal control device comprises a core memory in which a group of variable data such as elapsed times, steps and traffic information, a group of fixed data such as initial portions, unit extensions and maximum green signal periods, and a group of instruction data are stored; a pulse generator for generating pulses for varying the values of the variable data; and a control means for incrementing the data of elapsed time, comparing the incremented data to a corresponding fixed data, and incrementing the data of step when the value of the elapsed time equals with the corresponding fixed data.

3,764,974

VEHICLE FUNCTIONAL STATUS AND MONITOR SYSTEM

Cecilio Mellan, 511 Forest Drive, Casselberry, Fla.

Filed Aug. 1, 1972, Ser. No. 276,914
Int. Cl. G08b *19/00*
U.S. Cl. 340—52 F **10 Claims**



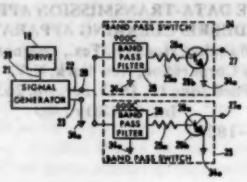
The invention relates to a vehicle function monitor and warning system incorporating audio and visual warning means controlled by a relay responsive to a plurality of electrically isolated condition responsive switch means.

3,764,975

VEHICLE SPEED RESPONSIVE CONTROL AND SIGNAL DEVICE

Rodney Hayden, Stoney Creek, Ontario, and Mario Guarasci, Niagara Falls, Ontario, both of Canada, assignors to TRW Inc., Cleveland, Ohio

Filed May 30, 1972, Ser. No. 257,570
Int. Cl. B60q *1/54*
U.S. Cl. 340—62 **6 Claims**



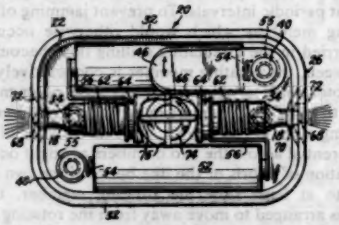
A control device for controlling the ignition timing of a vehicle is activated when the vehicle reaches a first predetermined speed and is retained in activated condition until the vehicle de-accelerates to a second lower predetermined speed. A frequency signal generator operated by the speedometer cable feeds a signal frequency proportional to the vehicle speed to a pair of bandpass switch devices respectively adapted to pass signals representative of the first and second predetermined speeds, the first channel including a normally open switch adapted to be closed by the passed signal and to be maintained closed until activated by a passed signal from the second channel closing a second normally open switch. In two embodiments, means for maintaining the switch of the first channel closed respectively comprise a relay switch having a pair of windings in opposed or bucking relationship and a bipolar condenser initially charged by the first passed signal and subsequently effectively shorted by the second passed signal.

3,764,976

PEDAL MOUNTED SIGNAL LIGHT

Paul H. MacMahon, Arlington, Va., assignor to David H. Williams, Jr.; Kenneth V. Curry, both of Hanover, Pa.; Arthur A. Kimball, Arlington, Va. and Donald L. Shephard, Delray Beach, Fla., part interest to each

Continuation of Ser. No. 771,475, Oct. 29, 1968, abandoned.
This application June 14, 1971, Ser. No. 152,991
Int. Cl. B62j *5/00*
U.S. Cl. 340—87 **6 Claims**



A translucent casing adapted to replace the outer end plate of a conventional bicycle pedal and having batteries, lights and a gravity actuated switch therein. The casing is preferably

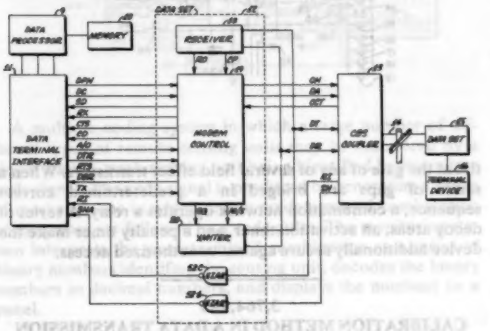
red in color, to glow when the lights are on. The switch is actuated by merely inverting the pedal on its customary spindle and a cam on that spindle causes the lights to blink. Exterior connections on the casing permit recharging the batteries while they remain in the casing.

3,764,977

SOLID-STATE MODEM CONTROL

Otto P. Weeden, Jr., Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 24, 1972, Ser. No. 309,400
Int. Cl. G06f *3/05*, *7/00*; H03k *17/00*
U.S. Cl. 340—147 R 9 Claims



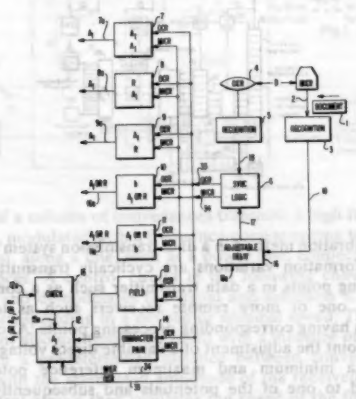
A plurality of solid-state one-shots, logic gates and JK flip-flops are used to provide a compact modem control having improved reliability of operation. The solid-state logic circuits improve the accuracy of the timing over modem controls using relays.

3,764,978

COMBINED MAGNETIC OPTICAL CHARACTER READER

Robert M. Tyburski, Fairfax, Va.; Donald W. Russell, Potamac, Md.; Brian D. Mayberry, Alexandria, and Joseph R. Kenney, Woodbridge, both of Va., assignors to Optical Recognition Systems, Inc., Reston, Va.

Filed May 2, 1972, Ser. No. 249,643
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 D 34 Claims



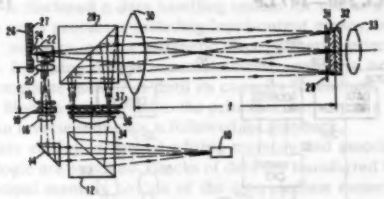
A system and method for character recognition in which each of a plurality of characters is recognized both magnetically and optically. If the magnetic reader fails to recognize a character while the optical reader is successful in recognizing it, a character identification signal corresponding to the character recognized by the optical reader is generated while if the optical reader fails to recognize a character and the magnetic reader is successful in recognizing it, an identification signal corresponding to the character recognized by the magnetic reader is generated. Where the magnetic and optical readers provide signals indicative of different characters while attempting to read the same character, depending on the parameters of the system an identification signal corresponding to one or the other recognition signals, or a reject signal is generated.

3,764,979

HOLOGRAPHIC SYSTEM FOR SUBJECT RECOGNITION PERMITTING CONVERSION OF A PATTERN INTO A MACHINE-READABLE FORM

Dennis Gabor, London, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 48,842, June 11, 1970, Pat. No. 3,600,054, which is a continuation of Ser. No. 565,519, July 15, 1966, abandoned. This application Aug. 3, 1971, Ser. No. 168,712
Claims priority, application Great Britain, Aug. 13, 1965, 34,703/65; Mar. 1, 1966, 8,945/66
Int. Cl. G06g *9/00*
U.S. Cl. 340—146.3 P 13 Claims



A holographic device for producing output image patterns in response to different input pattern wavefronts is described. A novel hologram is formed by the interference of a first pattern of electromagnetic waves and a second pattern of electromagnetic waves. The resultant hologram may be irradiated with a pattern of electromagnetic waves corresponding to the first pattern to reconstruct the second pattern of electromagnetic waves, and vice versa. To form the hologram a coherent light beam, such as from a laser, is directed on an object such as a transparency having a pattern thereon. The light from the object is directed onto a photographic emulsion. A coherent light beam also illuminates a second pattern, such as a coded apertured plate, and the light passing through the apertures is directed onto the photographic emulsion where it forms an interference pattern with the light from the first pattern. A hologram is thereby formed which, when illuminated by a pattern similar to one of the original patterns will reconstruct an image of the other original pattern.

3,764,980

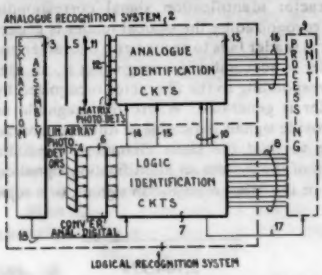
SYMBOL RECOGNITION SYSTEM PARTICULARLY FOR ALPHA-NUMERIC CHARACTERS

Jean Dansac; Robert Picciotto, and Jean-Pierre Bouron, all of Louveciennes, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 22, 1971, Ser. No. 182,690
Claims priority, application France, Sept. 25, 1970, 7034797
Int. Cl. G06k *9/02*
U.S. Cl. 340—146.3 ED 5 Claims

A combination of two symbol recognition systems, one of which is of the logic type and the other of the analogue type.

The latter is put in operation by the logic system in case of ambiguity in the identification of symbols by the logic system.



The combination allows the use of simplified recognition systems.

3,764,981

SYSTEM FOR TRANSMITTING 1-BIT INFORMATION HAVING PRIORITY LEVEL

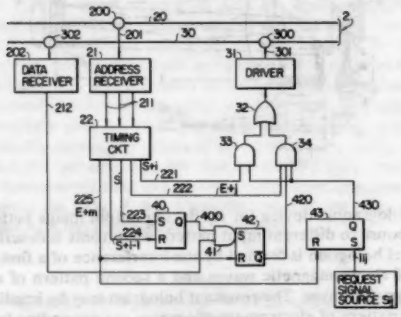
Kazuo Takasugi, Higashiyamato, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 9, 1971, Ser. No. 196,991

Claims priority, application Japan, Nov. 9, 1970, 45/97911

Int. Cl. H04q 9/00

U.S. Cl. 340—147 LP **15 Claims**



In a system comprising a central control room connected at one end of a bus, and a plurality of stations coupled to optional positions along the bus, whereby request signals from the respective stations are transmitted to the control room in the order of the height of the priority levels of the stations, an information transmission system is included wherein the stations are classified into *l* sets every *m* ones in the order of the height of the priority levels, while a time width in which the request signal is transmitted from each station to the bus is divided into two parts $P1$ and $P2$ continuous in time, so that level signals indicating the sets which are making request for starting may be transmitted every set of the *m* stations at the part $P1$, and that each station may transmit an order signal at the timing of $P2$ only when the level signal higher in priority than the set to which it belongs is not transmitted to the bus.

3,764,982

SEQUENTIALLY CODED ACTUATING DEVICE

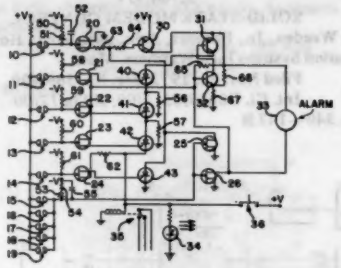
Robert E. Kidnocker, Jr., R.R. No. 8, Box 76, Chillicothe, Ohio

Filed Aug. 30, 1972, Ser. No. 284,975

Int. Cl. E05b 47/02

U.S. Cl. 340—147 R **13 Claims**

A sequentially coded actuating device has actuation terminals that are a series of conductive areas coated on a non-conductive substrate. The conductive areas may be arranged to provide an artistic configuration, and closing of the terminals is accomplished by bridging gaps between the areas with an externally applied resistive element such as a human finger. This bridging causes placement of an activating potential at the gate of any of several field effect transistors. When a series of gaps are bridged in a predetermined correct sequence, a combination network operates a relay. A series of decoy areas, an activation timer, and a penalty timer make the device additionally secure against unauthorized access.



3,764,983

CALIBRATION METHOD IN A DATA TRANSMISSION SYSTEM

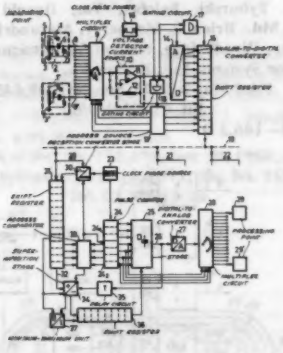
Filipous Leon Stok, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1972, Ser. No. 249,908

Claims priority, application Netherlands, May 19, 1971, 7106855

Int. Cl. G08b 5/22

U.S. Cl. 340—150 **5 Claims**



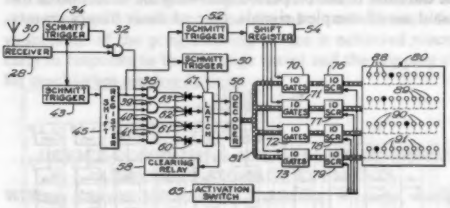
A calibration method in a data transmission system in which only information variations are cyclically transmitted from measuring points in a data transmitter such as a control station, to one or more remote receivers such as television cameras having corresponding processing points. At one measuring point the adjustment of a variable direct voltage source having a minimum and maximum reference potential is modified to one of the potentials and subsequently to the other. The receiver includes a store and the transmitted information regarding variation is superimposed on the store information for the processing point up to and not farther than a fixed minimum or maximum value.

3,764,984

INFORMATION CODING SYSTEM

James S. McCartney, Roseville, Minn., assignor to George W. Benz, St. Paul, Minn., a part interest

Filed Jan. 28, 1972, Ser. No. 221,695
Int. Cl. G08b *23/00*
U.S. Cl. 340—168 S 9 Claims



A multiple coding system in which a large number of different types of remote sensing units may be monitored by a single station, each sensing unit being identified by its unique code signal. The code signal is produced by generating a series of marker pulses in which only a predetermined combination of the pulses are followed by a code pulse. The monitoring station interprets the predetermined combination as a series of binary numbers identifing the sensing unit, decodes the binary numbers to decimal numbers, and displays the numbers on a panel.

3,764,985

METHOD AND MEANS FOR CONTROLLING THE DISTANCE BETWEEN TWO MOVING CONVEYANCES

Josef Hochreiter, Salzburg, Austria, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Nov. 29, 1971, Ser. No. 202,926
Claims priority, application Germany, Dec. 2, 1970, P 20 59 173.5
Int. Cl. H04q *9/12*; G08g *1/00*
U.S. Cl. 340—171 R 38 Claims

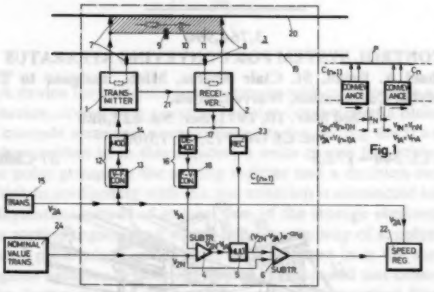


Fig.1

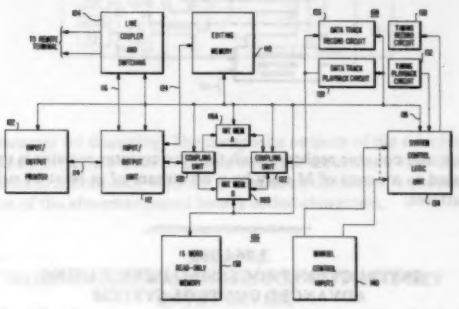
Each of a column of conveyances transmits a high frequency signal, modulated with a frequency corresponding to its actual speed, along a line, such as a power line, connecting the conveyances. A control circuit in the following conveyance receives and demodulates the signal and subtracts it from a signal corresponding to a desired or nominal speed. The control circuit also multiplies the result with a measure of departure from a predetermined distance between conveyances, namely with the attenuated amplitude of the received signal. The control circuit then regulates the speed of the following conveyance therewith. This allows large numbers of vehicles following each other to proceed at high speeds while remaining closely spaced.

3,764,986

MAGNETIC TAPE DATA PROCESSING SYSTEM

Charles F. Spademan, North Worthington, and Joseph P. Marsalka, Columbus, both of Ohio, assignors to MI², Columbus, Ohio

Continuation-in-part of Ser. No. 203,245, Nov. 30, 1971, and a continuation-in-part of Ser. No. 123,187, March 11, 1971. This application Aug. 9, 1972, Ser. No. 279,070
Int. Cl. G11b *27/02*
U.S. Cl. 340—172.5 38 Claims



There is disclosed a data handling system for use as a terminal or word processor including input-output means, intermediate memory and a magnetic tape cassette principal memory. Incoming data is accumulated alternately in one of the intermediate memories until its capacity is reached, then the data block is transferred to the principal memory at a high speed. An inverse sequence is followed for playback.

For data editing, a special editing memory and associated control logic are provided. Blocks of data are transferred from the principal memory to one of the intermediate memories. The data is entered in the editing memory either continuously or on a character-by-character basis controlled by the user. Data may be added or deleted as desired, after which, individual data blocks are returned to the principal memory. (Space in the latter is automatically allowed when data is recorded to accommodate added characters.)

During editing, line length adjustment is provided by converting "spaces" near the end of an edited line into "carrier returns". Carrier returns far from the end of an edited line become "spaces".

Search capability based on selectable identifying characters, both in forward and reverse directions of tape travel is also available. Searches may be part of the editing operation or simply in preparation for editing or a normal playback.

3,764,987

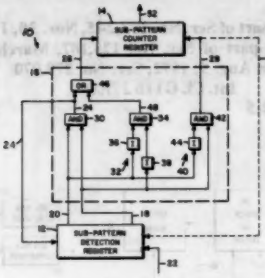
METHOD OF AND APPARATUS FOR CODE DETECTION

Fritz H. Schulze, St. Paul, Minn., assignor to Comten, Inc., St. Paul, Minn.

Filed Mar. 17, 1972, Ser. No. 235,567
Int. Cl. H04j *3/06*
U.S. Cl. 340—172.5 8 Claims

A method of and means for signal communication in which signals representative of a special condition are transmitted as a bit stream pattern comprising M sub-patterns which are each N bits long and each of which comprise N−1 bits of a first state and one bit of a second state. A said bit stream pattern is detected by a detector comprising a sub-pattern detection register for registering consecutive bits of a bit stream, a sub-

pattern counter register for counting M detections of a sub-pattern, and register control means for controlling the detection and counter registers such that the counter register is updated to a count of M only by a bit stream of at least M sub-patterns.

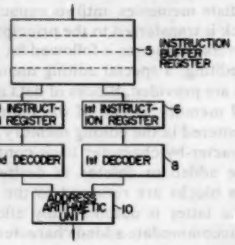


3,764,988

INSTRUCTION PROCESSING DEVICE USING ADVANCED CONTROL SYSTEM

Yoshihiro Onishi, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1972, Ser. No. 230,913
Claims priority, application Japan, Mar. 1, 1971, 46/9961
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **22 Claims**



An instruction processing device employs an advanced control system which has a first decoder for decoding, in sequence, ordinary instructions except branch instructions and a second decoder, additional to the first decoder, for discriminating branch instructions. When the second decoder discriminates a branch instruction, the contents of the discriminated branch instruction are preferentially address-modified and thus the instruction to which the branch is made is read out.

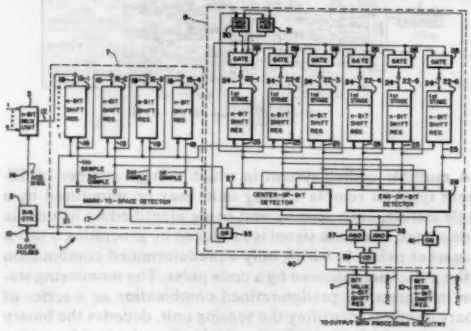
3,764,989

DATA SAMPLING APPARATUS

Ronald E. McClellan, Cinnaminson, N.J., assignor to Ultronic Systems, Inc., Moorestown, N.J.

Filed Dec. 20, 1972, Ser. No. 316,701
Int. Cl. G06k *7/016*; G08c *19/24*
U.S. Cl. 340—172.5 **20 Claims**

Data sampling apparatus for sampling and storing the values of bits included in a plurality of binary coded signals applied to a corresponding plurality of input data lines. The binary coded signals are sampled repetitively and sequentially by a multiplexer unit and the sampled signals, each having a value of "0" or "1," are applied to and stored in succession in a first plurality of shift registers. The shift registers are arranged to store a set, for example, four, of the most recent sampled signals derived from each of the binary coded signals. The sampled signals are examined at outputs of the shift registers by a mark-to-space detector to detect a set of the most recent sampled signals having particular values (e.g., 1100) indicating that a mark-to-space transition has occurred in a binary coded signal. At such time as this set of sampled signals is detected by the mark-to-space detector, a counter arrangement, including a second plurality of shift registers, is operated to provide successive binary counts at the outputs of the registers for the duration of the bit period following the detection of the aforesaid set of sampled signals. One of these binary counts, for example, a binary count of 15, is taken to represent the center of a bit period following a mark-to-space transition detected by the mark-to-space detector, and another of the binary counts, for example, a binary count of 31, is taken to represent the end of the bit period. Each binary count representing the center of a bit period is detected by a center-of-bit detector at which time a sampled signal representing the value of the bit in the bit period is transferred from the output of a selected one of the first plurality of shift registers to a bit value shift register. Each binary count representing the end of a bit is detected by an end-of-bit detector as a result of which the counting sequence for the bit period is determined and a new counting sequence is initiated for the next bit period.

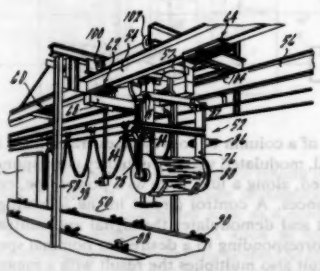


3,764,990

CONTROL SYSTEM FOR CONVEYING APPARATUS

Michael A. Brian, St. Clair Shores, Mich., assignor to The Udylite Corporation, Warren, Mich.

Filed Mar. 10, 1971, Ser. No. 122,820
Int. Cl. G06f *15/46*, *15/06*
U.S. Cl. 340—172.5 **37 Claims**



A control system for a conveying apparatus of a type consisting of one or more independently movable carriages supported on a rail extending along a series of treating stations, and wherein each carriage has one or more independently

movable lift mechanisms thereon for depositing and removing racks with workpieces at the stations. In one embodiment, the programming device on the carriage for providing sequentially-phased movement of the carriage and lift mechanisms is advanced by a transferring motor which is actuated in response to the tripping of sensing devices on the carriage indicating the position of the carriage relative to the stations and the up and down position of the lift mechanism.

The programming devices of each carriage, if a plurality of carriages are used, are interlocked to maintain them in sequence and a timer is employed to control portions of the operating cycle duration. In an alternate embodiment, the advancement of the programming device is achieved electronically in response to the carriage travel and the tripping of the lift mechanism sensing devices.

3,764,991

DEVICE COMPRISING A PLURALITY OF SERIES ARRANGED STORAGE ELEMENTS

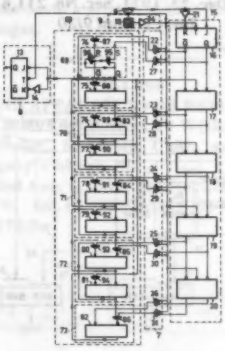
William Edward Metzenthen, Maidstone, Victoria, Australia, and Nicolaas Alphonsus Maria Verhoeckx, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,740

Claims priority, application Netherlands, July 17, 1970, 7010586

Int. Cl. G11c *19/00*

U.S. Cl. 340—172.5 **12 Claims**



A device for evaluating pulse groups with reference to a test criterion, comprising a sorting register consisting of a plurality of cascade arranged storage elements for sorting the 0 and 1 pulses written in in this register, a write circuit for writing in the pulse groups in the sorting register and a decision device which in conformity with the test criterion is connected to the information output of at least one of the storage elements of the sorting register and which indicates by way of supplying a 1 or 0 pulse whether the pulse group written in in the sorting register satisfies or does not satisfy the imposed test criterion. The device may be used, for example, as a matched filter, a control device for *m*-out-of-*n* codes or as majority decision decoder.

3,764,992

PROGRAM-VARIABLE CLOCK PULSE GENERATOR

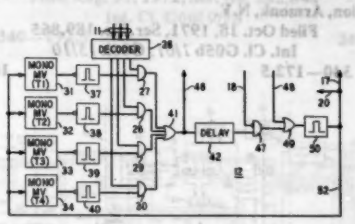
David Crosby Milne, Long Valley, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 14, 1972, Ser. No. 225,733

Int. Cl. G06f *1/04*

U.S. Cl. 340—172.5 **7 Claims**

A binary coded character is decoded to enable one of a plurality of AND gates that are respectively actuated by outputs of different monostable multivibrators, each having a different predetermined reset delay time. The selected gate output is further delayed and then utilized to retrigger the multivibrators simultaneously and to initiate the supplying of a new character for decoding. The composite outputs of the selected gates comprise a train of pulses having a recurrence rate that varies in accordance with the information content of a succession of the aforementioned binary coded characters.



3,764,993

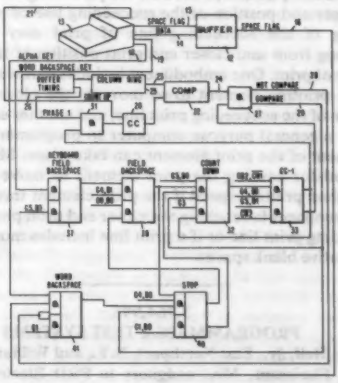
WORD BACKSPACE CIRCUIT FOR BUFFERED KEY ENTRY DEVICE

John Lettieri, Woodstock, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 22, 1971, Ser. No. 155,449

Int. Cl. G11c *19/00*; G06f *11/00*

U.S. Cl. 340—172.5 **7 Claims**

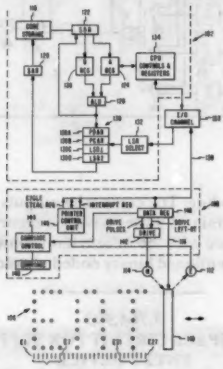


An improved word backspace circuit is provided for a key entry device having a shift register buffer memory that holds a character entered from the keyboard. As the operating position in the shift register buffer is backspaced toward the first character of a word, a logical operation is performed on each character of the record in a scanning operation that proceeds forward in the order that the characters of the record are entered in the buffer. In this forward scanning operation, each space is recognized and its occurrance is recorded in a latch. So long as the space is followed by at least one character position before the operating position in the buffer, the latch is reset and the backspace operation is continued to the next character position. When the space character position is followed immediately by the operating position, the latch is kept set to prevent a further backspace operation.

3,764,994
SERIAL PRINTER WITH BI-DIRECTIONAL DRIVE CONTROL

Everett G. Brooks, and David O. Lewis, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 18, 1971, Ser. No. 189,865
Int. Cl. G05b *1/01*; G06k *15/10*
U.S. Cl. 340—172.5 **18 Claims**

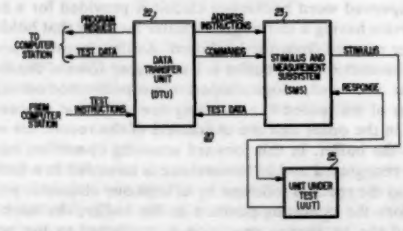


A serial printer having a print element capable of printing in both directions across a print form, means for pre-analyzing a succeeding line of print on the form following a preceding line of print to determine the end positions of the succeeding line of print, and means for causing the print element to move from the last position printed on the preceding line of print to the closer end position of the succeeding line of print so that printing of the succeeding line of print may take place beginning from said closer end print position of the succeeding line of print. One embodiment includes hardware for causing the printing element to so move to the closer end print position of the succeeding print line, and another embodiment utilizes a general purpose computer so programmed that this movement of the print element can take place. Means is also provided for causing the print element to move at a faster speed than printing speed if the print element traverses more than five spaces in reaching the closer end print position of the succeeding print line or if a print line includes more than five consecutive blank spaces.

3,764,995
PROGRAMMABLE TEST SYSTEMS

William Helf, Jr., East Northport, N.Y., and William M. Chandler, Florissant, Mo., assignors to PRD Electronics, Inc., Syosset, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,437
Int. Cl. G06f *11/04*
U.S. Cl. 340—172.5 **7 Claims**

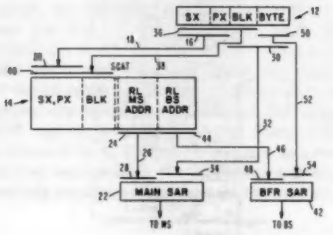


A programmable test system includes a system computer for storing information encompassing test programs and for issuing, when requested, instructions in the form of digital code words for implementing the test programs. Instructions from the system computer are requested by a data transfer unit which, in turn, supplies the instructions incorporating address information, function commands and data commands to a stimulus and measurement sub-system. The latter contains functional modules which are organized by the instructions to assume a test configuration for supplying input stimuli to an electronic unit under test and to measure the response of the unit under test to those stimuli. Each functional module required by a specific test program is programmed in sequence by the function commands, to adopt a test setup in which a specific function is to be performed by the module, such as the generation of a low frequency signal, or the measurement of an AC signal from the unit under test, within its functional capabilities. Each functional module may also be supplied with data commands within the test instructions, as necessary to impose specific numerical restrictions or the like upon the functions to be performed, such as assigning amplitude and frequency information to the generated signal, or specifying amplitude range and operational mode in which the response of the unit under test is to be measured. The functional modules may be reorganized as required to perform tests on dissimilar electronic units.

3,764,996
STORAGE CONTROL AND ADDRESS TRANSLATION

Robert Elmer Ross, West Hurley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,620
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **8 Claims**



A virtual memory system comprising a main storage and a smaller high speed buffer. Current virtual-to-real address translations for both the main storage and the buffer are retained in a Storage Control and Address Translator (SCAT). The SCAT comprises a content addressable (associative) memory. The CPU-provided virtual address is used to interrogate the SCAT. If the data that is referenced by the virtual address is available in main storage, the SCAT will provide the main storage real address. If the data is also available in the buffer, the SCAT will provide the buffer real address.

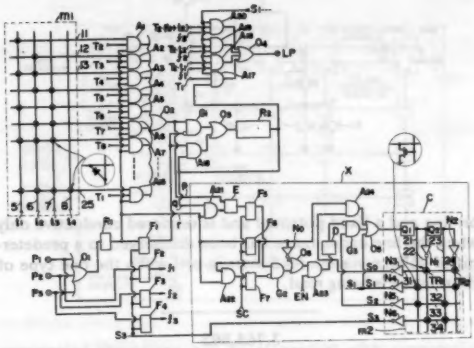
3,764,997
INPUT DEVICE

Isao Hatano, Kyoto, and Isao Mubuchi, Osaka-fu, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Kyoto-fu, Japan

Filed Jan. 20, 1972, Ser. No. 219,350
Claims priority, application Japan, Jan. 23, 1971, 46/2077
Int. Cl. G11c *19/00*
U.S. Cl. 340—172.5 **5 Claims**

In an input device for use in an electronic computer or the like, it is preferred to transfer the informations fed from a plurality of the information sources to the following stages at the predetermined periods, and in the event that two or more informations are applied to the input device simultaneously in

an overlapped condition, it is necessary to transfer each of the informations independently to the following stages to prevent erroneous operations. In accordance with the input device of the present invention, an information signal fed from a selected one of a plurality of the information signal sources is



stored in a shift register, on the other hand, the subsequent information signal is prohibited from entering to the shift register while the former information signal is stored in the shift register, and the information signal thus stored in the shift register can be read out at a predetermined period convenient to the following stages.

3,764,998

METHODS AND APPARATUS FOR REMOVING PARITY BITS FROM BINARY WORDS

William H. Spencer, Monrovia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 4, 1972, Ser. No. 278,137
Int. Cl. G06f *3/00, 5/06*
U.S. Cl. 340—172.5 **31 Claims**

Methods and apparatus for removing parity bits from a first continuous stream of binary words accompanied by a first series of clock pulses to identify the parity bits in the first stream of binary words and remove the identified parity bits. A second continuous stream of binary words is provided in which the binary words of the first stream are expanded into the time period of the removed parity bits. A second series of clock pulses which is provided is adapted to the expanded binary words in the second stream.

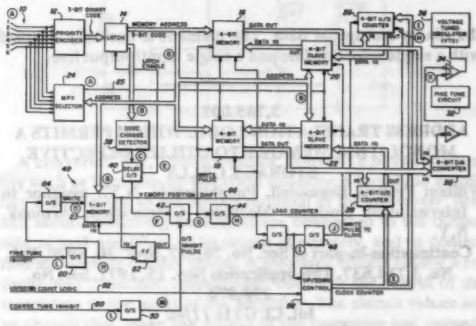
There are also disclosed methods and apparatus for identifying parity bits in a continuous stream of binary words having *n* word bits and *p* parity bits, the parity bits in different binary words being situated at corresponding locations, and the number of binary "one" word and parity bits being odd in essentially each word. These methods and apparatus determine for $m(n+p)$ bits from the stream of binary words whether the number of binary "one" bits in each set of successive $(n+p)$ bits of said $m(n+p)$ bits is even or odd, wherein *m* is a positive integer greater than one. These methods and apparatus further identify the parity bits in said $m(n+p)$ bits on the basis of said corresponding locations in response to a determination that the number of binary "one" bits in each set of successive $(n+p)$ bits of said $m(n+p)$ bits is odd.

3,764,999

SHARED MEMORY CIRCUIT

Brent S. Simons, and Howard L. Nurse, both of Palo Alto, Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Aug. 21, 1972, Ser. No. 282,648
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **24 Claims**



A circuit for allowing one microwave oscillator to be time shared between multiple incoming radar pulse trains for electronic countermeasure jamming purposes. Each pulse train is composed of pulses of radio frequency energy at a particular carrier frequency which is generally different from the carrier frequencies of other pulse trains. The circuit allows the microwave oscillator to be time shared on a pulse by pulse basis between all of the incoming radar pulse trains.

When an individual pulse train first enters the circuit, the circuit searches for the carrier frequency of the pulse train, and after lock-on digitally memorizes the carrier frequency for use in jamming as succeeding pulses are received in that pulse train. As each pulse in the pulse train is received, the circuit compares the frequency in memory with the carrier frequency of the received pulse. During the search period the circuit first goes through a coarse tune search sequence and then a fine tune search sequence. During the coarse tune search sequence the two frequencies are compared and if the two frequencies are greater than 10 megahertz (MHZ) apart, the circuit adds 10 MHZ to the frequency in memory. In this manner, the frequency stored in memory is stepped by 10 MHZ with each succeeding pulse until the frequency in memory comes to within 10 MHZ of a currently received pulse in the pulse train. At that point, the circuit enters a fine tune search sequence, and steps the frequency in memory by one MHZ increments until the frequency in memory is within one MHZ of a currently received pulse in that pulse train. Upon receipt of succeeding pulses in the pulse train the correctly memorized carrier frequency drives the microwave oscillator, the output of which is utilized for electronic countermeasure jamming purposes. If the carrier frequency of a pulse train is slewing, the circuit has the ability to track the slewed frequency without going into a search mode provided the slew rate is less than ± 10 MHZ per pulse.

3,765,000

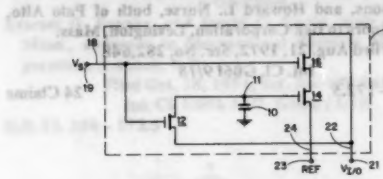
MEMORY STORAGE CELL WITH SINGLE SELECTION LINE AND SINGLE INPUT/OUTPUT LINE

William M. Regitz, Cupertino, Calif., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Nov. 3, 1971, Ser. No. 196,303
Int. Cl. G11c *11/24, 11/40, 7/00*
U.S. Cl. 340—173 CA **20 Claims**

An improved electronic memory storage element including

three transistors of the field effect type arranged to provide for



the binary storage of data. The element is basically coupled with a single selection line and a single input/output line.

3,765,001

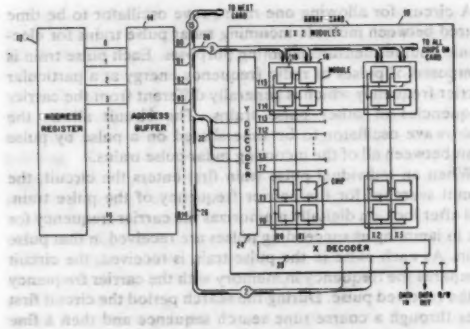
ADDRESS TRANSLATION LOGIC WHICH PERMITS A MONOLITHIC MEMORY TO UTILIZE DEFECTIVE STORAGE CELLS

William Francis Beausoleil, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 76,917, Sept. 30, 1970, Pat. No. 3,714,637. This application Nov. 15, 1971, Ser. No. 198,870

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R 2 Claims



In the production of monolithic memory chips used in computer storage devices a certain percentage is rejected in production as containing one or more defective bit cells on the chip. These almost perfect chips are arranged on a memory card bit so that all of the bit cards of a particular memory product are identical to those sections containing defective bit cells. The valid cells are logically arranged in contiguous address locations by translation logic which converts the address before it is presented to the memory bit cards. Addresses presented to the logic are re-ordered such that all addresses that, untranslated, would have selected a defective area of a chip, after being translated select a non-defective area of a chip.

3,765,002

ACCELERATED BIT-LINE DISCHARGE OF A MOSFET MEMORY

Paul-Werner V. Basse, Nantwein, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

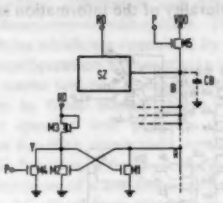
Filed Mar. 24, 1972, Ser. No. 237,654

Claims priority, application Germany, Apr. 20, 1971, P 21 19 059.0

Int. Cl. G11c *7/00, 11/24*

U.S. Cl. 340—173 CA 5 Claims

A memory having at least one storage cell constructed of MOS field effect transistors in which the reading of information of one kind from a storage cell is effected by discharging the line capacitance of the associated bit line wherein a discharge circuit includes a MOS field effect transistor switch whose controlled conduction path is connected between the



bit line and a fixed potential and is rendered conductive only when the line capacitance has been discharged to a predetermined voltage via the read storage cell when the one type of information is being read.

3,765,003

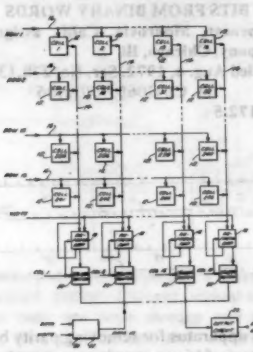
READ-WRITE RANDOM ACCESS MEMORY SYSTEM HAVING SINGLE DEVICE MEMORY CELLS WITH DATA REFRESH

John O. Paivinen, Huntington; Richard B. Rubinstein, New York; Leo Cohen, Commack, and Lamar T. Baker, Farmingdale, all of N.Y., assignors to General Instrument Corporation, Newark, N.J.

Continuation of Ser. No. 809,223, March 21, 1969, abandoned. This application Nov. 13, 1972, Ser. No. 305,936

Int. Cl. G11c *11/24, 7/00*

U.S. Cl. 340—173 CA 24 Claims



A memory cell for use in a random access memory system comprises a single switching device having a data storing element operatively connected to one of its output terminals. The control terminal receives an address signal which is effective to actuate the switching device, thereby to transfer the data signal from the storing element to the other of its output terminals. Means are provided to refresh the level of the stored data signal after the performance of a "read" operation on the memory cell.

3,765,004

MAGNETIC DOMAIN SERIAL-TO-PARALLEL ARRANGEMENT

Lionel Caron, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

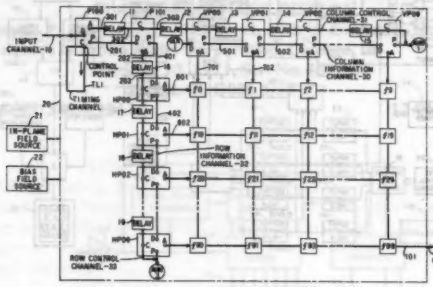
Filed Aug. 2, 1971, Ser. No. 168,017

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 TF 14 Claims

A magnetic domain serial-to-parallel converter is realized by a magnetically soft overlay geometry which controls the

movement of single wall domains in a slice of magnetic material in response to a reorienting magnetic field. The overlay geometry defines an input channel along which domains are serially propagated. A second channel is arranged parallel to the input channel and is constructed such that a domain



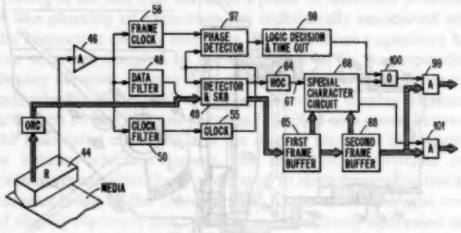
propagated therealong will be coincident with consecutive ones of the domains propagated serially along the input channel. At each coincident point the coincident input channel domain is moved to an auxiliary channel for propagation therealong.

3,765,005

DIGITAL SIGNAL RECORD SYSTEMS

Maxwell R. Cannon, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 18, 1972, Ser. No. 229,214
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 G **35 Claims**



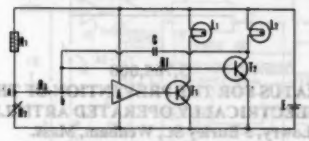
A digital magnetic recorder uses up to twice the Nyquist bandwidth of a data signal, plus a clock signal at a frequency exactly equal to the bit rate for reliably exchanging data signals with a magnetic media. The frequency response of the recording system is greater than twice the Nyquist bandwidth of the data signals to be recorded. Optionally, additional control signals at frequencies above or below the clock frequency but within the available recorder bandwidth may be recorded. Preferably, in a multi-track magnetic recording system, a signal component is added at a frequency near the clock frequency such that the difference between this signal and the clock have a wavelength of the magnetic media greater than the maximum skew of the multi-track system. Such signal component is usable as a resynchronization pattern. Additionally, write errors are detected during recording with special control indicia recorded on the media indicating such errors. Without stopping the media, a write retry is effected in a predetermined relationship with the special indicia. Various forms of the indicia are described including special data patterns, special signal components, and the like. Special circuits established for handling data signals using framing techniques are described.

3,765,006

LEVEL DETECTION CIRCUIT

Makoto Takahashi, Sagamihara, and Takao Hashimoto, Kawasaki, both of Japan, assignors to Yashica Company Ltd., Tokyo, Japan

Filed Feb. 22, 1972, Ser. No. 228,192
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 A **8 Claims**



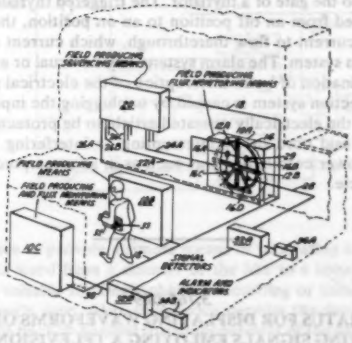
A converter, e.g., a photo resistor, converts a physical quantity such as light into an electrical quantity; a threshold amplifier is connected to the output terminal of the converter; first and second switching transistors are connected to the output side of said amplifier, to be driven alternately, and to control first and second display lamps. A feedback circuit having a resistor, and capacitor, respectively, connects the output of the transistors to the input of the amplifier. The circuit values are so chosen that, when the output of the converter just exceeds the threshold level of the amplifier, said amplifier becomes unstable (due to the R-C feedback circuit) to alternately illuminate said first and second display lamps; below or substantially above the threshold, the one, or other lamp is selectively continuously lit.

3,765,007

METHOD AND APPARATUS FOR DETECTING AT A DISTANCE THE STATUS AND IDENTITY OF OBJECTS

James T. Elder, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 840,973, July 11, 1969, Pat. No. 3,665,449. This application May 9, 1972, Ser. No. 251,767
Int. Cl. G08b *13/24*
U.S. Cl. 340—280 **12 Claims**



A non-contact system for distinguishing the presence, identity or status of an object and markers for use therein.

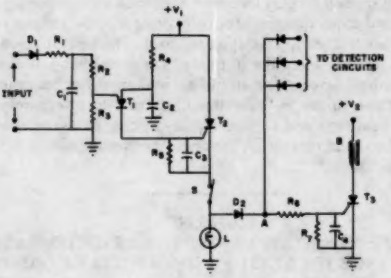
The system comprises a marker including a ferromagnetic material to accompany each object to be detected, means for producing an alternating magnetic field within a zone through which the objects are to pass, means for monitoring magnetic flux changes within the zone and a circuit for detecting a flux change within the zone which corresponds to a signal characteristically produced by magnetization reversal of the marker ferromagnetic material. The marker comprises "n" sections of

a ferromagnetic material and may include a remanently magnetizable control element to provide a sensitized and desensitized marker for demagnetized and magnetized states, respectively, of the control element. A plurality of magnetic field producing means are employed to produce in the zone magnetic fields of different orientations, virtually assuring production of a characteristic signal when a marker is passed into the zone.

3,765,008
APPARATUS FOR THE PREVENTION OF THEFT OF ELECTRICALLY OPERATED ARTICLES

Ralph W. Lowry, 5 Burley St., Wenham, Mass.

Filed June 23, 1972, Ser. No. 265,608
Int. Cl. G08b *13/00*
U.S. Cl. 340—280 **6 Claims**



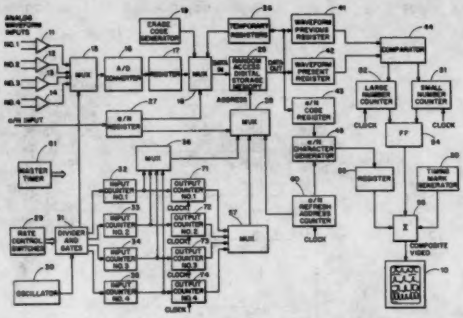
Apparatus for the prevention of theft of electrically operated articles includes a detection system and an alarm system. The detection system is activated by interruption of electrical power to the gate of a programmable unijunction transistor which then becomes conducting and completes a circuit to the gate of a thyristor. The triggered thyristor is thus converted from an off position to an on position, thereby allowing current to flow therethrough, which current activates an alarm system. The alarm system may be visual or audible or a combination of both. Interruption of the electrical power to the detection system is caused by unplugging the input power cord to the electrically operated article to be protected, or by cutting said cord or by interrupting or interfering with the input power cord in any way such as in an attempted theft of the article.

3,765,009
APPARATUS FOR DISPLAYING WAVEFORMS OF TIME-VARYING SIGNALS EMLOYING A TELEVISION TYPE DISPLAY

William P. Graves, Brighton; Francis C. Passavant, West Newton, and Allen J. Worters, Newton Highlands, all of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 1, 1972, Ser. No. 230,708
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **7 Claims**

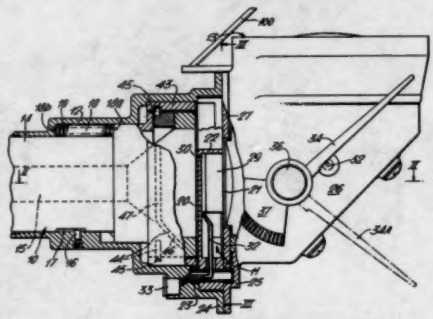
Television display system for displaying the waveform of a time-varying input signal. The displayed waveform moves across the display screen. The scanlines of the raster scan-line pattern are traced on the display screen in a direction orthogonal to the direction of movement of the waveform. The waveform image is constructed on the display screen by writing along each scanline between two data points which are obtained from adjacent samples of the input signal.



3,765,010
ELECTRICALLY-OPERATED DISPLAY DEVICES

Kenneth Gordon McAinsh, 24 Fairfield Dr., Camberly; Ralph David Smith, 31 Manor Rd., Walton-on-Thames, and Edward Lawrence Lamb, Sandringham Dr., Ashford, all of England

Filed Nov. 23, 1971, Ser. No. 201,476
Claims priority, application Great Britain, Nov. 24, 1970, 55,703/70
Int. Cl. G08b *5/36*
U.S. Cl. 340—27 NA **15 Claims**



An electrically-operated display device comprises an evacuated, or alternatively gas-filled, housing and three electric filaments disposed within the housing to provide an illuminated display when energized to incandescence. The filaments are carried within the housing on a planar panel that is supported from a base of the housing on terminal pins so as to have an upper face in close proximity to, and exposed for view through, a transparent wall of the housing. The filaments, connected at either end to the terminal pins, are threaded through holes spaced across the surface of the panel such that successive spaced parts of the filaments extend across the panel surface to define discrete portions of the symbol to be displayed. The display device is mounted in head-up display equipment of an aircraft as the source of an auxiliary stand-by display that may be selected for projection via a collimator onto a partially transparent reflector in the line of sight of the aircraft pilot. This auxiliary display is interchangeable with the main flight display provided by a cathode-ray tube in the event of failure of the tube, pilot operation of a selector handle in one

direction retracting the tube from the collimator and then pivoting the stand-by display into the resultant space along an arcuate path substantially normal to the direction of retraction of the tube.

3,765,011

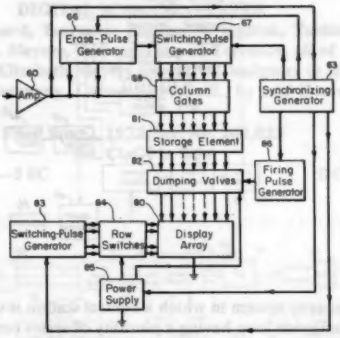
FLAT PANEL IMAGE DISPLAY

Samuel P. Sawyer, and Alan Sobel, both of Evanston, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed June 10, 1971, Ser. No. 151,636

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 M **12 Claims**



A plurality of display elements such as light generators or modulators are distributed over an image-display panel in horizontal rows and vertical columns. Each element is capable of displaying light in proportion to its level of energization. One side of each of the elements is returned to a conductive coating or the like that serves as a plane of reference potential. A like plurality of capacitors are individually associated with the respective display elements. Each of those capacitors has one terminal coupled to the other side of its corresponding display element. A plurality of breakdown-type switches are individually associated with the respective display elements and each switch has one terminal coupled to a point between the associated capacitor and the display element. In response to column-selection signals, the columns of switches and capacitors are selectively addressed to store respective instantaneous levels of the video signals. At the same time, the rows of display elements and switches are selectively addressed in a manner that first permits such storage and then effects delivery of the stored energy to the display elements.

3,765,012

ANALOG-DIGITAL CONVERTER UTILIZING MULTIPLE RAMP INGEGRATING TECHNIQUES

Hartmut Grutzediek, Hausberge, and Joachim Scheerer, Robert-Bosch-Strasse 3, Frankenthal, both of Germany

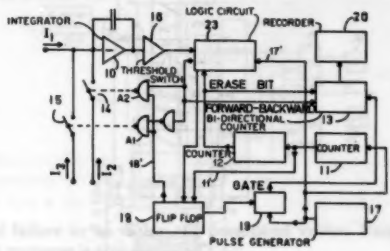
Filed Mar. 22, 1972, Ser. No. 237,058

Claims priority, application Germany, Mar. 24, 1971, P 21 14 141.3

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 NT **9 Claims**

An analog current I_1, to be digitized is fed continuously to the input of an integrator. Two pulse counters, serially connected, algebraically count pulses from a pulse generator, the first pulse counter of the two setting, upon overflow, a bistable element to one of its states. The bistable element will remain in the state until either one of two conditions occur: (a) A threshold switch connected to the output of the integrator commutates or (b) the first pulse of the pulse generator, after change-over of the threshold switch occurs. The first condition (a) occurs when the second pulse counter is at a predetermined, for example final state of its count; the second condition (b) occurs in all other cases. In accordance with the state of the threshold switch, the bistable flip-flop circuit permits either a current I_2, or a current I_3 (the two currents being of opposite polarity) to be applied, simultaneously with the current I_1 to the integrator by suitable switches during predetermined time intervals W. The time interval W is defined as the



sum of the time intervals occurring between two successive overflow pulses of the second counter, during which I_2 is simultaneously integrated with current I_1, less the sum of the time intervals during which current I_1 is integrated with current I_3. A digital value corresponding to the analog value of current I_1 is then stored, in the form of pulse counts, in a counter.

3,765,013

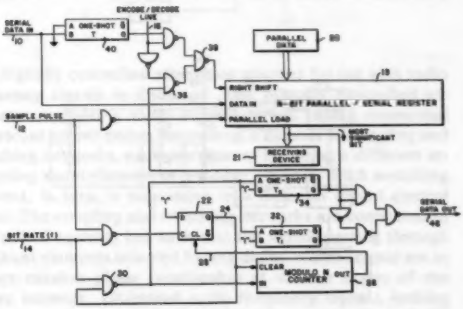
SELF SYNCHRONOUS SERIAL ENCODER/DECODER

Lawrence M. Leibowitz, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 23, 1972, Ser. No. 265,866

Int. Cl. H03r *13/24*

U.S. Cl. 340—347 DD **6 Claims**



A device to provide a simple means of translating a parallel n-bit data word from a counter or the like to a serial format which is suitable for single channel recording or transmission over a single wire. Also, this device permits the decoding of serial data back to parallel form independent of the exact time location of the leading bit of the serial code.

3,765,014

KEYBOARD

Frank E. Taylor, Danvers, Mass., assignor to Syner-Data, Inc., Beverly, Mass.

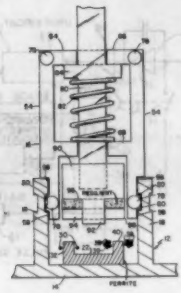
Filed Oct. 12, 1970, Ser. No. 79,752

Int. Cl. G08c *9/04, 19/28*

U.S. Cl. 340—365 **15 Claims**

Keyboard for converting information to an electrical pulse code, comprising a base in which are mounted gapped mag-

netic core segments, primary and secondary wiring associated with the core segments and arranged to be magnetically coupled upon effective bridging of the core gaps and individual key modules corresponding to the core segments, each



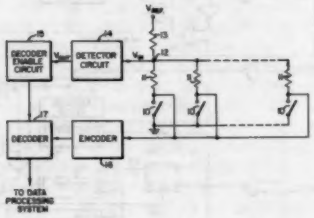
module having a housing independent of the base, a bar movable axially in and biased away from the core segments with respect to the housing, a key cap mounted at one end of the bar, and a magnetic core bridging member actuatable by the bar upon key depression to close the core gap.

3,765,015

SWITCH MONITORING CIRCUITRY

Ronald H. Gruner, Framingham, Mass., assignor to Data General Corporation, Southboro, Mass.

Filed Sept. 20, 1971, Ser. No. 181,955
Int. Cl. G06f 3/02
U.S. Cl. 340—365 E 6 Claims



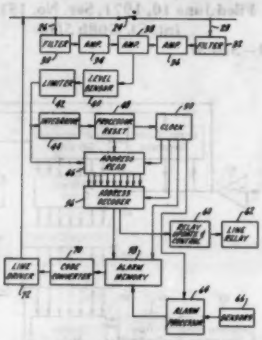
A system for monitoring the operation of a plurality of switches which are each connected in series with a resistor, the plurality of switch-resistor circuits being connected in parallel and in turn connected at a common point through a common resistor to a reference voltage source. In a preferred embodiment, a detector circuit is connected to the common point and is used to detect the change in voltage thereat when one or more of the switches is activated so as to provide an output voltage when such change is detected. The detector includes time delay circuitry for producing such output voltage only after the switching transient oscillation decays to a negligible value. The output voltage from the detector may be used to provide for the enabling of additional circuitry in response to such activation of one or more of the switches. If desired, an additional detector may be used to prevent such enabling when more than one switch has been activated simultaneously.

3,765,016

SECURITY SYSTEM INCLUDING MEANS FOR POLLING THE PREMISES TO BE PROTECTED

Paul A. Bert, Oregon; Leo Jedynak, Madison, and Stanley E. Gulf, Madison, all of Wis., assignors to Oak Electro Netics Corp., Crystal Lake, Ill.

Filed May 24, 1971, Ser. No. 146,111
Int. Cl. G08b 26/00
U.S. Cl. 340—408 R 4 Claims



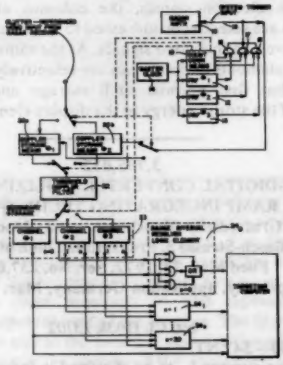
A security system in which a central station is connected to a transmission loop having a plurality of series connected subscriber stations. Transmission and receiving means are located at the central station and each of the subscriber stations has means for receiving an interrogating signal from the central station and for responding with a signal indicating the condition of the alarm system at the subscriber location.

3,765,017

AMTI RANGE AMBIGUITY RESOLVER

Mauro Joseph Dentino, Placentia, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed June 12, 1968, Ser. No. 738,722
Int. Cl. G01s 9/42, 9/44
U.S. Cl. 343—7.7 6 Claims



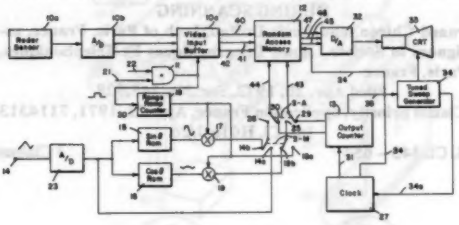
In a pulsed energy system, employing higher PRF's for increased data rates, means for reducing the range ambiguity in moving target data associated with range time intervals in excess of the pulse repetition interval. A plurality of radar data matrix storage means is employed, each representing a like plurality of successive range trace intervals, a preselected range time increment or difference existing between successive ones of the radar data matrices. A doppler buildup at a

like range bin in each of the matrices describes a moving target at less than an ambiguous range, however, a doppler buildup at a mutually exclusive range bin in each of the three matrices indicates a target in any ambiguously indicated, but determinable, range. Logic means responsive to the condition of the difference between the ambiguous range indications, relative to the preselected range difference between the matrix storage means, determines that range compensation term to be added to an indicated range for purposes of an unambiguous MTI range trace display.

3,765,018
DIGITAL SCAN CONVERTER

James L. Heard, Torrance; Eugene W. Opittek, Tustin, and Harold M. Meyers, deceased, late of Torrance, all of Calif. (by Mary Elizabeth Meyers, executrix), assignors to Hughes Aircraft Company, Culver City, Calif., by said Heard and said Opittek

Filed June 2, 1972, Ser. No. 260,023
Int. Cl. G01s 7/04
U.S. Cl. 343—5 SC **8 Claims**



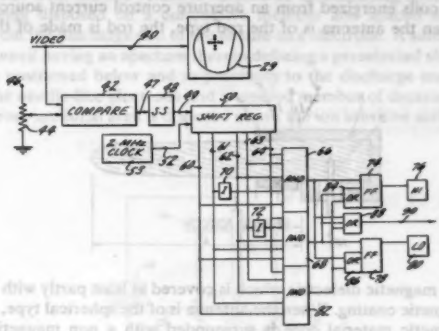
There is disclosed a visual scan converter which accepts digitalized video data available from a source such as a radar receiver in any given scan pattern such as a PPI format at slow radar rates and converts the data format to make it suitable for presentation on a cathode ray tube in a standard television or other orthogonal raster at flicker free rates. Greater flexibility and economy than has heretofor been available in digital scan converters is achieved by using a random access memory. Conversion of the video data format is achieved by generating loading addresses for putting the data into memory which are representative of the functional relationship between the scan pattern at which the data was derived and that at which it is intended to be displayed. A simple counter may then be used to orthogonally address the random access memory for readout at any desired rate.

3,765,019
PASSIVE RADAR GLIDE SLOPE ORIENTATION INDICATION

Lester H. Kosowsky, Stamford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 20, 1972, Ser. No. 236,047
Int. Cl. G01s 9/52, 7/06
U.S. Cl. 343—5 LS **6 Claims**

Selected ones of a sequence of radar reflectors disposed adjacent to a runway are oriented in such a fashion that the relative direction vector between an aircraft approaching a runway and illuminating the reflectors with its radar can be determined to be too high, too low, or too far to the right or left by failure to receive a response from those of the reflectors oriented to provide a response only within certain angles of a preferred approach vector. The glide slope orientation may be viewed directly on a radar scope, or presented as discrete indi-

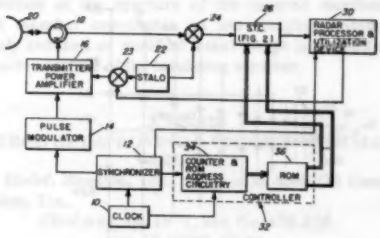


cations of failure to be within the prescribed vector. Range gating the response is also disclosed.

3,765,020
DIGITALLY CONTROLLED ATTENUATOR

Ronald W. Seager, Hamilton; Dennis A. Lonigro, Woburn, both of Mass., and Oscar Lowenschuss, Goleta, Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 14, 1972, Ser. No. 243,963
Int. Cl. G01s 7/34
U.S. Cl. 343—5 SM **9 Claims**



A digitally controlled attenuator adapted for use with radio frequency signals is disclosed. The digitally controlled attenuator includes a radio frequency bus having connected thereto, at proper points therealong, a number of coupling and switching networks, each one thereof including a different attenuating shunt element of a ladder network. Each switching element, in turn, is responsive to a different digital control signal. The coupling and switching networks are connected to the radio frequency bus such that the signals passing through the shunt elements selected by any digital control signal are in proper relative phase relationship at various nodes of the ladder network. Unwanted radio frequency signals, leaking through a switching element which has been placed in its "off" condition, are cancelled by radio frequency signals having a relative 180° phase shift from the radio frequency signals being attenuated.

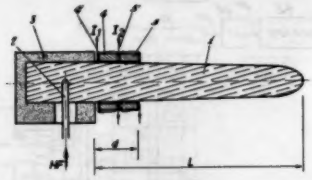
3,765,021
ADJUSTABLE APERTURE ANTENNA EMPLOYING DIELECTRIC AND FERRIMAGNETIC MATERIAL

Bernard Chiron, and Louis Duffau, both of Paris, France, assignors to Societe Lignes Telegraphiques Et Telephoniques, Paris, France

Filed July 14, 1971, Ser. No. 162,444
Claims priority, application France, July 30, 1970, 7028150; Jan. 14, 1971, 7101105
Int. Cl. H01q 13/00
U.S. Cl. 343—785 **6 Claims**

In order to obtain wide aperture and high directivity radiation patterns from the same antenna, the radiating structure is

made of a non magnetic dielectric and a dielectric ferrimagnetic material. The magnetic part is associated with magnetizing coils energized from an aperture control current source. When the antenna is of the rod type, the rod is made of the



non magnetic dielectric which is covered at least partly with a magnetic coating. When the antenna is of the spherical type, a magnetic material core is surrounded with a non magnetic dielectric shell.

3,765,022

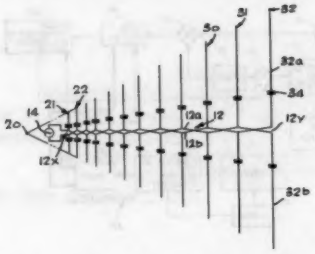
EXTENDED APERTURE LOG-PERIODIC AND QUASI-LOG-PERIODIC ANTENNAS AND ARRAYS

Robert L. Tanner, 895 Loma Verde Ave., Palo Alto, Calif.

Continuation-in-part of Ser. No. 782,201, Dec. 9, 1968, abandoned. This application Aug. 17, 1971, Ser. No. 172,518

Int. Cl. H01q *11/10*

U.S. Cl. 343—792.5 **16 Claims**



An extended aperture log-periodic antenna in which each element is capacitively loaded to tune out a portion of the element's inductive reactance, so that at any frequency within the antenna's frequency range series resonance occurs at an element whose physical length exceeds one-fourth free space wavelength of the applied signals. An extended aperture quasi-log-periodic antenna is also disclosed, in which only selected elements are capacitively loaded resulting in increased beam sharpness which is not in a true log-periodic relationship even though the antenna impedance remains constant over the antenna's entire operating range, as in a true log-periodic antenna. Linear and circular arrays, employing capacitively loaded elements, are also disclosed.

3,765,023

CIRCULARLY POLARIZED ANTENNA

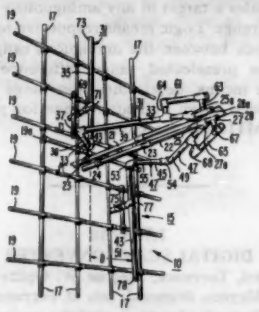
Oded Ben-Dov, Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 21, 1972, Ser. No. 291,063

Int. Cl. H01q *21/26*

U.S. Cl. 343—797 **6 Claims**

An antenna for launching and receiving circularly and elliptically polarized electromagnetic waves includes a pair of conductive elements. Each of the elements has a horizontal portion and a continuing vertical portion. The horizontal portions of the first and second elements are arranged to form a first center fed dipole oriented in the horizontal plane and the vertical portions of the first and second elements are arranged to form a second center fed dipole oriented in the vertical plane. The center feed point of the first dipole is spaced from the



center feed point of the second dipole so that the phase center of the waves associated with the two dipoles are at phase quadrature.

3,765,024

ANTENNA ARRAY WITH PATTERN COMPENSATION DURING SCANNING

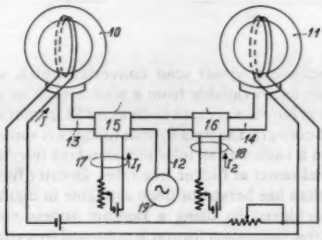
Bernard Chiron, and Louis Duffau, both of Paris, France, assignors to Societe Lignes Telegraphiques Et Telephoniques, Paris, France

Filed Apr. 20, 1972, Ser. No. 245,928

Claims priority, application France, Apr. 22, 1971, 7114313

Int. Cl. H01q *3/26*

U.S. Cl. 343—854 **3 Claims**



An array is made of elemental radiators with an adjustable aperture controlled by a magnetizing field established within a magnetic section of the radiator. The broadening of the radiation pattern resulting from large amplitude scanning is compensated through aperture control of the individual radiators patterns in the array by means of the magnetizing field within said radiator.

3,765,025

TIME DIFFERENTIATING PASSIVE IMPULSE GAGE

William A. Zietzke, San Jose, and Alexander L. Florence, Menlo Park, both of Calif., assignors to the United States of America as represented by the Secretary of the Air Force

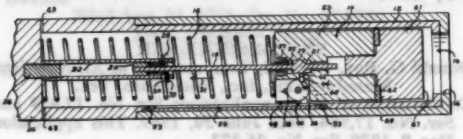
Filed Dec. 11, 1972, Ser. No. 314,053

Int. Cl. G01d ; G01l

U.S. Cl. 346—7 **3 Claims**

A passive impulse gage, having a spring loaded mass responsive to impulses and extraneous loads in nuclear tests, has a locking device to prevent reverse motion of the mass. A scribe mechanism has two spring loaded marking pins for marking a scribe plate. When the motion of the mass stops, the marking wheel is permitted to rotate to move one marking pin out of

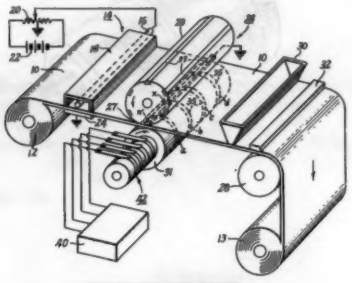
engagement with the scribe plate and to move the other marking pin into engagement with the scribe plate so that the indication due to the test impulse is displaced on the scribe plate from indications due to extraneous loads.



3,765,026
ELECTROGRAPHIC RECORDING SYSTEM

Alfred J. Rittler, Webster, and Michael E. Wilmer, Fairport, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,442
Int. Cl. G03g *15/00*
U.S. Cl. 346—74 ES **5 Claims**



An electrographic contact charging apparatus is provided comprising a roll containing a plurality of spaced electrodes in the surface thereof, said electrodes being disposed concentrically with the axis of rotation of said roll; a grounded electrode being spaced from said roll and parallel with the axis of rotation thereof and extending substantially coterminously with said roll; said grounded electrode and the electrodes in said roll being adapted to make contact in the nip formed therebetween with a dielectric medium adapted to pass therethrough; means for generating sequential informational triggering pulses; and commutating means for connecting the electrodes in said roll with said means for generating said triggering pulses.

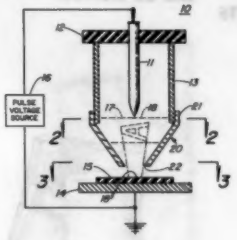
In another embodiment, a process is provided for continuous electrographic recording comprising passing an insulating web through the nip formed by a first roll containing a plurality of spaced electrodes in the surface thereof, said electrodes being disposed concentrically with the axis of rotation of said roll and at least one grounded electrode spaced from said roll and parallel with the axis of rotation thereof and extending substantially coterminously with said roll; forming electrostatic latent images on the web by selective charge transfer between the electrodes in said roll and said grounded electrode generated by sequential informational triggering pulses applied to the electrodes in said roll; and developing said electrostatic latent images.

3,765,027
ION LENS RECORDING SYSTEM

Herbert Bresnick, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,124
Int. Cl. G03g *15/04*
U.S. Cl. 348—74 ES **5 Claims**

An ion beam imaging apparatus for uniformly reducing an ion beam of a preselected shape. An ion beam is generated by supplying a suitable electrical voltage to a needle-like electrode with the ion sensitive surface of an insulating member being disposed on a conductive member and spaced away from the discharge end of the needle-like electrode. A suitable stencil having an aperture therein defining a preselected shape is positioned below and in proximity to the discharge end of the needle-like electrode and a tapered member of decreasing cross-sectional area is disposed above the ion sensitive surface

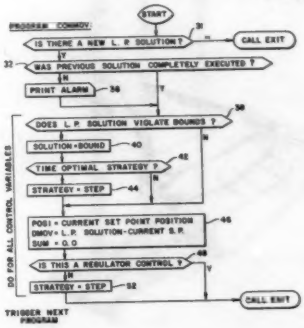


in a substantially surrounding relationship to the ion beam defined by the stencil aperture. The aperture of the tapered member at the lower end thereof is disposed in proximity to the ion sensitive surface and remote from the stencil with the ion beam being converged and correspondingly reduced in cross-section at the aperture of the tapered member. The tapered member constitutes an ion imaging system as a uniformly reduced or minified latent image is defined on the ion sensitive surface of the insulating member.

3,765,028
METHOD OF IMPROVING A PROCESS WITH MANY VARIABLES

Ginton Shelef, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 10, 1971, Ser. No. 170,538
Int. Cl. G05b *19/00*
U.S. Cl. 444—1 **3 Claims**


START
PROGRAM COMMON
IS THERE A NEW L. P. SOLUTION ?
CALL EXIT
WAS PREVIOUS SOLUTION COMPLETELY EXECUTED ?
PRINT ALARM
DOES L.P. SOLUTION VIOLATE BOUNDS ?
SOLUTION = BOUND
TIME OPTIMAL STRATEGY ?
STRATEGY = STEP
POSI = CURRENT SET POINT POSITION
DMOV = L.P. SOLUTION - CURRENT S.P.
SUM = 0.0
IS THIS A REGULATOR CONTROL ?
STRATEGY = STEP
CALL EXIT
TRIGGER NEXT PROGRAM
DO FOR ALL CONTROL VARIABLES

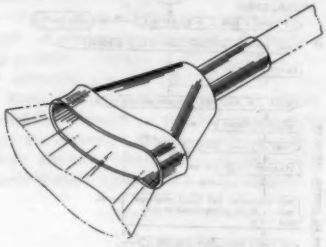
A method of improving process performance by detecting the controlled process variable with longest response time and cutting that response time. The response time of all other process variables is detected and appropriate delays are introduced into each control variable so that all process variables reach their final set point at the same time. Any errors in the arrival time of process variables at their final set point are detected and the appropriate delays are modified accordingly.

DESIGNS

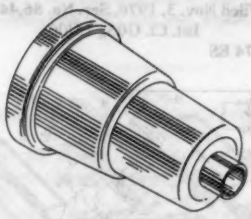
OCTOBER 9, 1973

228,531
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed Mar. 1, 1972, Ser. No. 231,085
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

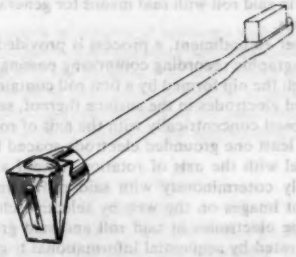
228,532
BROOM SHOULDER
Donald G. Ray, Garland, Tex., assignor to All-American Manufacturing, Inc., Winnsboro, Tex.
Continuation of design applications Ser. No. 17,959 and Ser. No. 17,984, both June 30, 1969. This application Dec. 9, 1970, Ser. No. 26,373
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—4



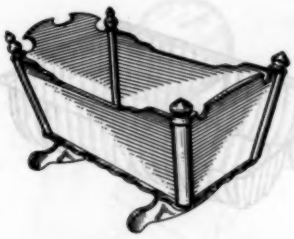
228,533
BROOM SHOULDER
Donald G. Ray, Garland, Tex., assignor to All-American Manufacturing, Inc., Winnsboro, Tex.
Continuation of design applications Ser. No. 17,959 and Ser. No. 17,984, both June 30, 1969. This application Dec. 9, 1970, Ser. No. 26,372
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—4



228,534
TOOTH STAIN-REMOVER TIP FOR TOOTHBRUSHES AND THE LIKE
Lewis James Halberstadt, Williamsburg, Mass., assignor to Vistron Corporation, Cleveland, Ohio
Filed Sept. 3, 1971, Ser. No. 177,914
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—24

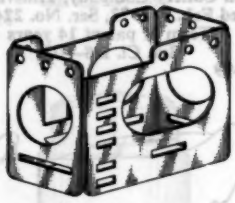


228,535
CRADLE
Gustav Sallfrid Lundgren, Pilgaten 3, and Stig Edvin Herbert Wallersten, Restadvagen 1, both of Vanersborg, Sweden
Filed Aug. 24, 1971, Ser. No. 174,584
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—15



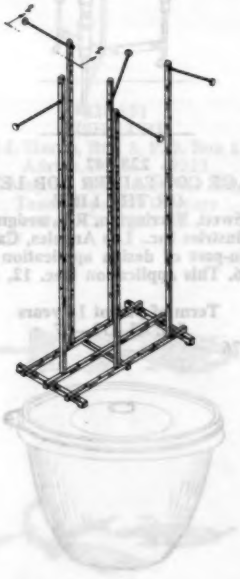
228,536
CHAIR
Ettore Sottsass, Jr., Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy
Filed Mar. 2, 1972, Ser. No. 231,454
Claims priority, application Italy Sept. 6, 1971
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

228,537
BUNK BED
James R. Jennings, 5833 Lawton Ave., Oakland, Calif. 94618
Filed Feb. 3, 1972, Ser. No. 223,404
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—79

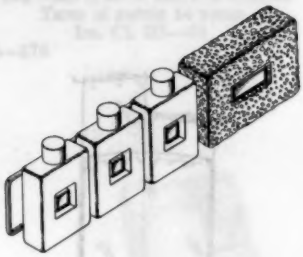


228,538
DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,284
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—85

228,539
ADJUSTABLE CLOTHING DISPLAY RACK
Daniel E. Gelles, 1140 Broadway, Kerhonkson, N.Y. 10001
Filed June 18, 1971, Ser. No. 154,709
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



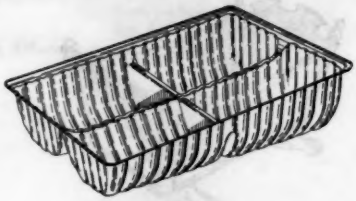
228,540
COMBINED SPONGE, CONTAINERS FOR TOILETRIES AND SUPPORT THEREFOR
Dale D. Smith, Irvine, Calif., assignor to Design West Incorporated, Irvine, Calif.
Filed Dec. 10, 1971, Ser. No. 206,982
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—91



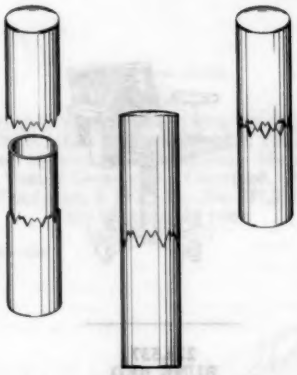
228,541
DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed Apr. 7, 1972, Ser. No. 242,283
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—176

228,542
STORAGE CONTAINER FOR LETTUCE OR THE LIKE
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Continuation-in-part of design application Ser. No. 906, Feb. 3, 1966. This application Dec. 12, 1966, Ser. No. 5,008
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—76

228,543
COMPARTMENTED PACKAGING TRAY
George E. Jansen, Cedar Grove, N.J., assignor to The Pantasote Company of New York, Inc., New York, N.Y.
Filed Sept. 20, 1971, Ser. No. 182,286
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187

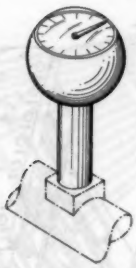


228,544
LIPSTICK CONTAINER
Roy S. Swenson, Danbury, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Nov. 8, 1971, Ser. No. 196,872
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D86—10 G

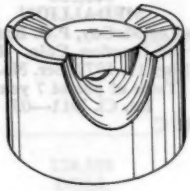


228,545
KNIFE
Frank G. Beddick, Franklinville, N.Y., assignor to Queen Cutlery Company, Titusville, Pa.
Filed Feb. 7, 1972, Ser. No. 224,376
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

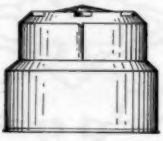
228,546
INDICATING CONTROL LEVER OR THE LIKE
Harrison M. Dean, 205 N. 31st Ave., Yakima, Wash. 98902
Filed June 1, 1971, Ser. No. 149,091
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D8—107



228,547
DISPENSER HEAD FOR A PRESSURIZED CONTAINER
Haus Grothoff, Valbert, Germany, assignor to Perfect-Ventil G.m.b.H., Dortmund-Koerne, Germany
Filed Oct. 5, 1972, Ser. No. 295,367
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258

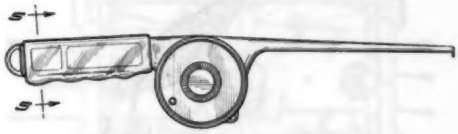


228,548
BOTTLE CAP
Maxwell H. Connan, 240 Glen Head Road, Glen Head, N.Y. 11545
Filed Aug. 18, 1972, Ser. No. 281,703
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—284



228,549
COMBINATION ICE FISHING REEL HANDLE AND JIG STICK
Arthur A. Kasper, 220 East St. S., and Leverne E. Roufs, 120 Lake Ave. E., both of Winsted, Minn. 55395
Continuation-in-part of design application Ser. No. 180,245, Sept. 13, 1971. This application Sept. 25, 1972, Ser. No. 291,774
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26

228,550
COMBINATION ICE FISHING JIG STICK AND REEL
Arthur A. Kasper, 220 East St. S., and Leverne E. Roufs, 120 Lake Ave. E., both of Winsted, Minn. 55395
Continuation-in-part of abandoned design application Ser. No. 180,246, Sept. 13, 1971. This application Sept. 25, 1972, Ser. No. 291,810
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—26



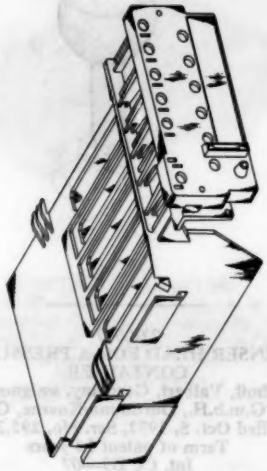
228,551
FISH LURE
Ewell J. Harris, Rte. 3, P.O. Box 135A, Adrian, Mich. 49221
Filed May 22, 1972, Ser. No. 255,939
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

228,552
FLEXIBLE ARTIFICIAL FISHING LURE
Carl R. Cordell, Jr., P.O. Box 2020, Hot Springs, Ark. 71901
Filed May 31, 1972, Ser. No. 258,482
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

228,553
FISH LURE
Floren J. Sanderson, R.D. 4, Bandy Road, Alliance, Ohio 44601
Filed Apr. 12, 1972, Ser. No. 243,535
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

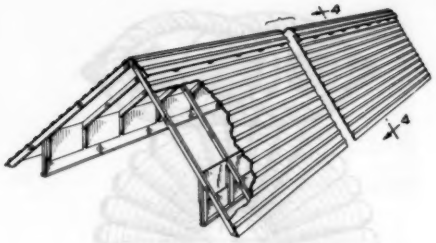
228,554
DUAL HYDRAULIC CONNECTOR
Vincent G. Magorien, Granada Hills, Calif., assignor to Seaton-Wilson, Inc., Burbank, Calif.
Filed May 28, 1971, Ser. No. 148,281
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

228,555
MAIN DISTRIBUTION FRAME-MOUNTED CENTRAL OFFICE SUBSCRIBER CARRIER CHANNEL UNIT SHELF OR SIMILAR ARTICLE
Gene L. Stumpf, Belmont, and Donald G. Tweed, Mountain View, Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Oct. 4, 1972, Ser. No. 295,056
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 R



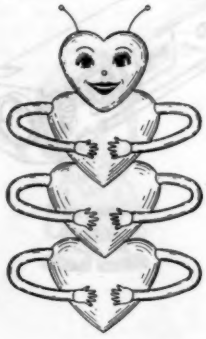
228,556
MEDALLION
Dan Lee McCoy, P.O. Box 1245, Grand Junction, Colo. 81501
Filed May 11, 1972, Ser. No. 252,536
Term of patent 7 years
Int. Cl. D11—*03*
U.S. Cl. D29—11 C

228,557
A-FRAME POULTRY HOUSE
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed June 1, 1971, Ser. No. 149,093
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1

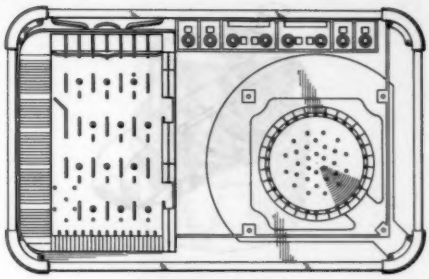


228,558
LITTER PAN FOR CATS
Robert W. Brickel, 483 Sharon Drive, Rochester, N.Y. 14626
Filed Apr. 6, 1972, Ser. No. 241,865
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

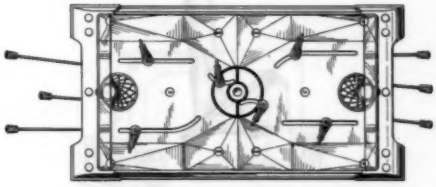
228,559
DOLL
Joyce P. Cervantes, 9815 C St., Oakland, Calif. 94603
Filed July 28, 1972, Ser. No. 276,237
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



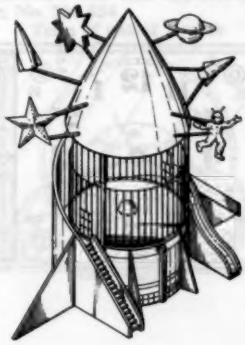
228,560
GAME BOARD
Nicholas D. Trbovich, 59 Fieldcrest Court, West Seneca, N.Y. 14224
Filed Aug. 27, 1971, Ser. No. 175,792
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BG



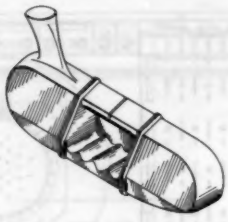
228,561
BASKETBALL GAME BOARD APPARATUS
Nicholas D. Trbovich, West Seneca, and Eugene R. Trunzo, North Tonawanda, N.Y.; said Trunzo assignor to Servotronics, Inc., Buffalo, N.Y.
Filed Sept. 27, 1971, Ser. No. 184,325
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



228,562
AMUSEMENT-RIDE DEVICE
John P. Von Atzingen, 260 North St., Jersey City, N.J. 07307
Filed Oct. 1, 1971, Ser. No. 185,924
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L

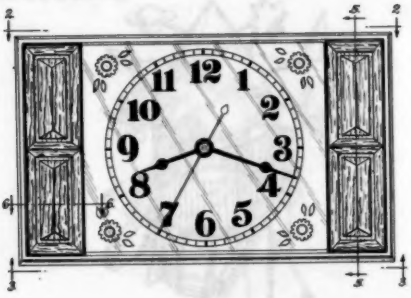


228,563
GOLF CLUB HEAD
George C. Brower, 2308 Pacific Ave., Long Beach, Calif. 90806
Filed July 28, 1972, Ser. No. 276,092
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

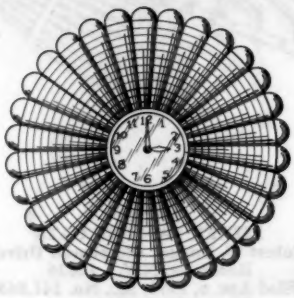


228,564
GOLF CLUB HEAD
Joseph M. Braly, Kennett Square, Pa., assignor to Con-Sole Golf Corporation, Chadds Ford, Pa.
Filed July 24, 1972, Ser. No. 274,565
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

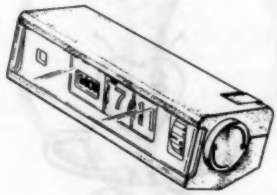
228,565
CLOCK
Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 12, 1971, Ser. No. 161,387
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



228,566
WALL CLOCK
Lillian C. Dale, 2004 Weaver Circle, Monroe, La. 71201
Filed Mar. 3, 1972, Ser. No. 231,799
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R

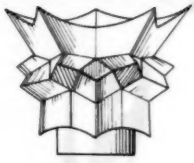


228,567
DIGITAL CALENDAR CLOCK
Hideaki Nagata, Tokyo-to, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan
Filed June 16, 1972, Ser. No. 263,644
Claims priority, application Japan Dec. 17, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



228,568
FINGER RING
Thomas Lawson Wilkinson, 50 Waite Ave., Cranston, R.I. 02905
Filed Nov. 29, 1971, Ser. No. 203,123
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

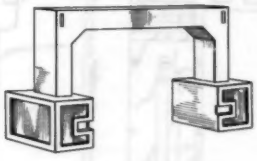
228,569
REFLECTOR FOR A LAMP
Merril Hermanson, New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,876
Term of patent 14 years
Int. Cl. D26—*05;* D11—*05*
U.S. Cl. D48—16 D



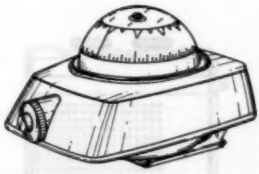
228,570
NIGHT LIGHT
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.
Filed May 18, 1972, Ser. No. 254,833
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E

228,571
EMERGENCY WARNING LIGHT
Oliver J. Burland, 214 Rugley Road, Western Springs, Ill. 60558
Filed Feb. 23, 1972, Ser. No. 228,800
Term of patent 14 years
Int. Cl. D26—*02;* D29—*02*
U.S. Cl. D48—24 R

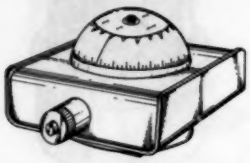
228,572
SUPPORTING FRAME FOR POLISHING APPARATUS
Joseph L. Genaro, Knightstown, Ind., assignor to Shur Brite Wax-O-Matic, Inc.
Filed June 28, 1971, Ser. No. 157,785
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—12



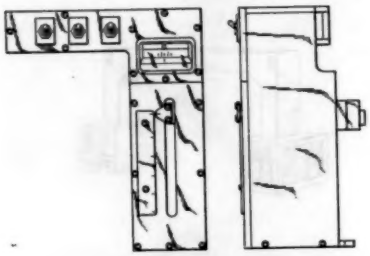
228,573
MAGNETIC COMPASS
Toshikazu Yusa, 8–15 Oyama-cho, Shibuya-ku, Tokyo, Japan
Original design application Dec. 29, 1970, Ser. No. 26,694. Divided and this application Nov. 19, 1971, Ser. No. 200,654
Term of patent 7 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 R



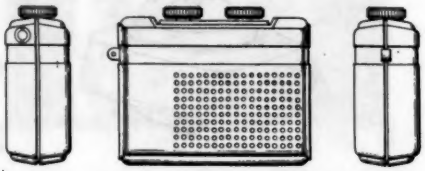
228,574
MAGNETIC COMPASS
Toshikazu Yusa, 8–15 Oyama-cho, Shibuya-ku, Tokyo, Japan
Original design application Dec. 29, 1970, Ser. No. 26,694. Divided and this application Nov. 19, 1971, Ser. No. 200,655
Term of patent 7 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 R



228,575
QUILL DRIVE FOR VERTICAL DRILLING OR MILLING MACHINE
Warren E. Ponemon, Oyster Bay, N.Y., assignor to Autonumerics, Inc., Westbury, N.Y.
Filed Oct. 4, 1971, Ser. No. 186,585
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—14 B



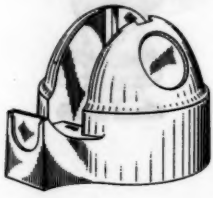
228,576
RADIO RECEIVER
Wai Ying Chan, Quarry Bay, Hong Kong, assignor to Stereo Electronic Limited, Quarry Bay, Hong Kong
Filed May 23, 1972, Ser. No. 256,219
Claims priority, application Great Britain Nov. 23, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



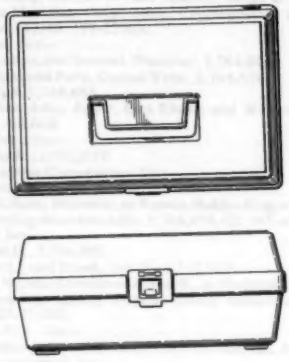
228,577
LENS CLUSTER UNIT FOR PHOTOPRINTING
Richard M. Artz, 3902 Silverton Road NE., Salem, Oreg. 97308
Original design appplication May 28, 1970, Ser. No. 23,198, now Patent No. 223,593, dated May 9, 1972. Divided and this application June 28, 1971, Ser. No. 157,811
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q

228,578
CAMERA
Theodore J. Glaros, Roland L. Hron, and George E. Pribyl, Minneapolis, Minn., assignors to Cir-Tech, Inc., Columbia Heights, Minn.
Filed Aug. 16, 1972, Ser. No. 281,203
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B

228,579
TAPE DISPENSER
Alwin John Stahel II, New Brighton, Minn., assignor to The Holes-Webway Co., St. Cloud, Minn.
Filed Aug. 14, 1972, Ser. No. 280,323
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—1 B



228,580
COMBINED CARRYING AND STORAGE CASE
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Filed Dec. 23, 1971, Ser. No. 211,847
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R



228,581
CARPET
Jon M. Blumenaus and Evan Armstrong, Jr., Dalton, Ga., assignors to World Carpets, Dalton, Ga.
Filed July 6, 1972, Ser. No. 269,399
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF OCTOBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbagnaro, Louis A., to United States of America, Navy. Underwater earphone. 3,764,966, Cl. 340-14.000.

Abbott, Georg F.; Gilley, Charles H.; and Skatrud, Ralph O., to International Business Machines Corporation. Cryptographic identification system. 3,764,742, Cl. 178-22.000.

Abbott Laboratories: *See—*
Jones, Peter Hadley; and Somani, Pitambar, 3,764,679.
Swett, Leo Ralph; and Paris, Gerard Yvon, 3,764,610.
Swett, Leo Ralph, 3,764,688.
Theriault, Robert John; Fager, Earl Elmer; and Wideburg, Norman Earl, 3,764,603.

Abbott, Paul, Co., Inc.: *See—*
Nuckols, Phillip H., 3,763,937.

ABC Packaging Machine Corporation: *See—*
Reichert, Donald G., 3,763,750.

Abe, Shigeo; and Kohata, Mamoru, to Kyowa Hakko Kogyo Co., Ltd. Process for producing microbial cells. 3,764,476, Cl. 195-49.000.

Abex Corporation: *See—*
Webster, David D., 3,764,802.
Wilson, Rosser L.; and Frank, Earl E., 3,763,967.

Abraham, Richard H.; and Kowalewski, Rolf E., to Motorola, Inc. Multiple control point switching system having automatic access. 3,764,912, Cl. 325-22.000.

ACF Chemiefarma N.V.: *See—*
Akkerman, Antony M.; and Janssen, Paul Adriaan Jan, 3,764,606.

ACF Industries Incorporated: *See—*
Niebrzydoski, John L., 3,764,119.

Ackerman, Martin S.; and Hardy, George, to Perfect Film & Chemical Corporation. Camera with built-in stroboscopic flash. 3,763,752, Cl. 95-11.50r.

Addressograph-Multigraph Corporation: *See—*
Brown, Albert C., 3,763,777.
Dailey, Earl E.; Barton, Jerry M.; Minnis, Ralph L.; and Baltazzi, Evan S., 3,764,316.
Deutsch, Fritz A., 3,763,986.
Shelffo, Loren E., 3,764,538.

Adler, Karl-Heinz: *See—*
Fournell, Hans-Dieter; Adler, Karl-Heinz; and Locher, Johannes, 3,763,744.

Admiral Corporation: *See—*
Kowalewski, Edward C., 3,764,729.

Aerojet-General Corporation: *See—*
Betchelt, Rodi; and Reynolds, Clifton J., 3,763,747.
Windisch, Stefan, 3,764,275.

Aeschbach, Peter: *See—*
Etzel, Karl Wilhelm Friedrich; and Aeschbach, Peter, 3,764,509.

Aesculap Werke Aktiengesellschaft vormals Jetter & Scheerer: *See—*
Hildebrand, Hans Gunter, 3,763,726.

Agar, Joram, to Agar, Joram, & Company Limited. Measuring of fluid density. 3,763,692, Cl. 73-32.000.

Agar, Joram, & Company Limited: *See—*
Agar, Joram, 3,763,692.

Agence Nationale de Valorisation de la Recherche: *See—*
Cuq, Pierre, 3,763,688.

Agfa-Gevaert Aktiengesellschaft: *See—*
Himmelmann, Wolfgang; Von Konig, Anita; Moll, Franz; Rocker, Dietrich; and Saleck, Wilhelm, 3,764,339.
Kampher, Helmut; Ohlschlager, Hans; and Von Konig, Anita, 3,764,321.
Kampher, Helmut; Gotze, Johannes; Von Konig, Anita; and Ohlschlager, Hans, 3,764,322.
Neudecker, Karl, 3,764,199.
Nittei, Fritz; and Lohmer, Karl, 3,764,336.

Agfa-Gevaert N.V.: *See—*
Depoorter, Henri; and Moelants, Felix Jan, 3,764,338.
Depoubier, Henri; and Moelanis, Felix Jan, 3,764,317.
Laridon, Urbain Leopold, 3,764,318.

Agriga, Masao: *See—*
Takahashi, Isao; Fujii, Motoharau; Kawakubo, Kazuo; Agriga, Masao; and Sugiura, Susumu, 3,764,208.

Aguadisch, Leon; and Mistou, Michel, to Produits Chimiques Pechiney-Saint Gobain. Trichloroethylene emulsion based cleaning composition. 3,764,545, Cl. 252-171.000.

Ahlegian, Otto A. Optical hole film punch. 3,763,730, Cl. 83-521.000.

Aine, Harry E.: *See—*
Sisil, Paul N., 3,763,511.

Air Industrie: *See—*
Lacchia, Aurien, 3,764,068.

Air Products and Chemicals, Inc.: *See—*
Gaumer, Lee S., Jr.; and Newton, Charles L., 3,763,658.

Airco, Inc.: *See—*
Coad, Brian C.; and Palmer, Raymond B., 3,764,297.
Terrell, Ross C., 3,764,705.
Terrell, Ross C., 3,764,706.

Airrigation Engineering Company, Inc.: *See—*
Horne, Frederick F.; and Vanderlans, Gerald G., 3,763,896.

Airway Industries, Inc.: *See—*
Taylor, Ronald C., 3,763,973.

Aizu, Keiichiro; Kumada, Akio; and Koga, Masashi, to Hitachi, Ltd. Ferroelastic device. 3,764,197, Cl. 350-161.000.

Akamatsu, Akiyuki: *See—*
Yamamoto, Hiroya; Tokita, Yuichiro; Fuziyoshi, Kenzi; Kasuga, Naoatu; Akamatsu, Akiyuki; and Sakurai, Hiroo, 3,764,487.

Akiyama, Daiichi, to Yashica Co., Ltd. Automatic shutter control citcuit. 3,763,751, Cl. 95-10.0ct.

Akiyama, Naoki: *See—*
Mizuno, Hideaki; and Akiyama, Naoki, 3,764,367.

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Alderfer, Sterling W., to Steelastic Company, The. Helically formed filaments particularly adapted for reinforcing elastomeric fabric, method and apparatus for producing same. 3,763,683, Cl. 72-77.000.

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Allain, Ronald J.; and Braithwaite, David G., to Nalco Chemical Company. Production of organic amides from organic nitriles. 3,764,494, Cl. 204-74.000.

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Andersen, Niels H.; and Weinshenker, Ned M., to Alza Corporation. Pharmaceutical compositions comprising alkylsilyl ethers of prostaglandins. 3,764,673, Cl. 424-184.000.
Anderson, Clarence A. F., to Shaw-Walker Company, The. Lateral file. 3,764,190, Cl. 312-286.000.
Anderson, Dennis R., to Avtron Manufacturing, Inc. Direct current tachometer system. 3,764,888, Cl. 322-20.000.
Anderson, Donald L., to Amerock Corporation. Latch for a trash compactor drawer or the like. 3,764,171, Cl. 292-8.000.
Anderson, George, to Allmanna Svenska Elektriska Aktiebolaget. Method of storage and heat-retaining for treated nodular cast iron. 3,764,305, Cl. 75-130.00r.
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Arenas, Gabriel N. Cutting guide. 3,764,126, Cl. 269-60.000.
Arff, John H.; and Burns, James R. Oxygen analyzing instrument. 3,764,504, Cl. 204-195.00p.
Argoudelis, Alexander D.; Bannister, Brian; Kagan, Fred; and Magerlein, Barney J., to Upjohn Company, The. Composition and process of treatment using lincomycin derivatives. 3,764,672, Cl. 424-181.000.
Armbrust, Herbert; Kilpper, Gerhard; Koehler, Waldemar; Quadbeck-Seeger, Hans Juergen; Schecker, Hans Georg; and Sturm, Hans Juergen, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 1-methyl-3-phenylindans. 3,764,631, Cl. 260-668.00f.
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Ashby, David Franklin, to International Business Machines Corporation. Web edge marking apparatus and method. 3,763,729, Cl. 83-355.000.
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Austin, George K., Jr. Light base for a dental chair. 3,764,795, Cl. 240-2.00r.
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Axbjer, Erik Lennart. Pipe cutting apparatus. 3,763,559, Cl. 30-100.000.
Ayling, John; and Moore, Richard D., to International Business Machines Corporation. Monolithic memory system with bi-level powering for reduced power consumption. 3,764,833, Cl. 307-296.00a.
B & K Machinery International, Limited: *See—*
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Baierl, Kenneth W., to Scott Paper Company. Recovery and separation of chemicals produced during kraft pulping operations. 3,764,461, Cl. 162-16.000.
Baierl, Kenneth W., to Scott Paper Company. Recovery of furfural and methanol from spent pulping liquors. 3,764,462, Cl. 162-16.000.
Baizer, Manuel M.; and Wagenknecht, John H., to Monsanto Company. Electrolytic preparation of esters from organo halides. 3,764,492, Cl. 204-59.00r.
Baker, Don R., to Stauffer Chemical. Method of controlling algae with trichloroacrylonitrile. 3,764,291, Cl. 71-67.000.
Baker, Don R.; Menn, Julius J.; and Freiberg, Ashley H., to Stauffer Chemical Company. Inhibiting fungal growth with 2-benzimidazole alkyl carbamates. 3,764,687, Cl. 424-273.000.
Baker, Don Robert, to Stauffer Chemical Company. 2,2,3,4,5,5-Hexachloro-2,5-dihydrothiophene 1,1 dioxide used to control bacteria and fungi. 3,764,689, Cl. 424-275.000.
Baker, Elina: *See*—
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Baker, Harvey O.; and Hoff, Johan E., to Eckrich, Peter, & Sons, Inc. Smoking of food products. 3,763,767, Cl. 99-476.000.
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Bakken, Ronald J. High fidelity audio amplifier. 3,764,930, Cl. 330-16.000.
Balde, John William, to Western Electric Company, Incorporated. Electrically conductive flat cable structures. 3,764,727, Cl. 174-34.000.
Baldt, Alfonso L., to Alloy Surfaces Co., Inc. Formation of diffusion coatings on nickel containing dispersed thoria. 3,764,371, Cl. 117-71.00m.
Baldwin, Keith M., to Michigan Technological University, Board of Control of. Electrolytic electrical field mapping device. 3,764,900, Cl. 324-71.00r.
Ballew, Julius R. Earth anchor and apparatus for applying. 3,763,610, Cl. 52-160.000.
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Banzet, Frederic. Doors with electro-mechanical operating means. 3,763,594, Cl. 49-126.000.
Barb, Raymond P.; and Sutar, William, to General Electric Company. Ni-Au base brazing alloy. 3,764,307, Cl. 75-170.000.
Barber, Anthony Clifford; and McDougall, Ian Leitch, to Imperial Metal Industries (Kynoch) Limited. Method of fabricating intermetallic type superconductors. 3,763,553, Cl. 29-599.000.
Barbera, Melvin A., to Procter & Gamble Company. Unsaturated zwitterionic surface active composition. 3,764,568, Cl. 252-526.000.
Barcza, Sandor, to Sandoz-Wander, Inc. 2-Trialkylsilylalkyl-5,6-dihydro-1,3(4H)-oxazines. 3,764,597, Cl. 260-244.00r.
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Barnes, Clare Earl, to Bell Telephone Laboratories, Incorporated. Resonance suppression in interdigital capacitors useful as DC bias breaks in diode oscillator circuits. 3,764,938, Cl. 331-96.000.
Barnes, Gene A., to Eaton Corporation. Pressure switch. 3,764,763, Cl. 220-83.0sa.
Barrachina, Antonio Vila-Coro: *See*—
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Bartlett, Peter G.; Henry, Donald E.; and Riceman, Kenton L., to Struthers-Dunn Inc. Cabinet for interchangeable circuit boards. 3,764,857, Cl. 317-101.0dh.
Bartley, Thomas S.; Descary, John Gilbert; Futcher, R. James; and Krishnan, R. Gopala, to International Paper Company. Suction box and baffle for fourdrinier type of papermaking machine. 3,764,465, Cl. 162-351.000.
Barton, Jerry M.: *See*—
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Barton, Kenneth R.; and Caldwell, John R., to Eastman Kodak Company. Process for placing modifiers within polyester fibers and films. 3,764,374, Cl. 117-119.600.
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Bartram, Nial C.; and Scheid, William J., to Schick Incorporated. Hair dryer. 3,763,573, Cl. 34-99.000.
BASF Wyandotte Corporation: *See*—
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Baues, Peter, to Siemens Aktiengesellschaft. Laser arrangement for creating a stable pulse with short pulse spacings. 3,764,936, Cl. 331-94.500.
Baumann, Karl-Friedrich; Hoff, Hans; and Braumuller, Kurt, to Gottfried Bischoff, bau Kompl. Gasreinigungsunder Wasserruckkuhlanlagen KG and Waagner-Bido AG. Gas-collecting method for a steel-making converter. 3,763,763, Cl. 98-115.00r.
Bausch & Lomb Incorporated: *See*—
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Beachley, Robert W. Zero-ground fault-cutout desensitizing device. 3,764,855, Cl. 317-18.00r.
Beachley, Robert W., Jr. Means for dual level ground fault protection of A.C. circuits. 3,764,853, Cl. 317-18.00d.
Bealor, Jesse L., Jr., to United States of America, Navy. Method of making an acoustic window including filling honeycomb cells individually. 3,764,432, Cl. 156-242.000.
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Beausoleil, William Francis, to International Business Machines Corporation. Address translation logic which permits a monolithic memory to utilize defective storage cells. 3,765,001, Cl. 340-173.00r.
Beck, Lloyd; Igarashi, Yoshiya; Thompson, Benjamin L.; and Thurman, Robert V., to United States of America, Navy. Underwater echo-ranging and signal-return correlation apparatus. 3,764,963, Cl. 340-3.00r.
Beck, Roderick; Harmon, James F.; Shatila, Mounir A.; Richins, David A.; and Lach, John, to American Potato Company. Method for forming French-fry-cut potato pieces. 3,764,345, Cl. 426-506.000.
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Bellows, Guy, to General Electric Company. Method and apparatus for electrolytic material removal. 3,764,510, Cl. 204-284.000.

Bellware, James D., to General Motors Corporation. Windshield wiper apparatus. 3,763,518, Cl. 15-250.170.

Beloit Corporation: *See—*
Mauger, Leroy L.; and Gilbert, Robert W., 3,764,246.

Ben-Dov, Oded, to RCA Corporation. Circularly polarized antenna. 3,765,023, Cl. 343-797.000.

Benbrook, Charles H.: *See—*
LeClair, Albert W.; and Benbrook, Charles H., 3,764,333.

Bender, Charles E.; and Fraser, Douglas S., to Cenco Medical/Health Supply Corporation, mesne. Fermenter having a magnetically driven agitator. 3,764,836, Cl. 310-98.000.

Bendix Corporation, The: *See—*
Fort, Jack B., 3,764,943.
Rachel, Todd L., 3,763,833.

Bendler, Hellmut; Brede, Uwe; Gawlick, Heinz; and Roh, Peter, to Dynamit Nobel Aktiengesellschaft. Metal layer initiator. 3,763,782, Cl. 102-28.0gb.

Benedetto, Domenico: *See—*
Hamilton, Douglas D.; Boivin, Joseph J. R.; and Benedetto, Domenico, 3,763,905.

Benedict, Bruce C.: *See—*
Garner, James W.; and Benedict, Bruce C., 3,764,633.

Bengtsson, Anders Eric: *See—*
Lindskog, Per Folke; Bengtsson, Anders Eric; Grek, Sven-Erik; and Lagerholm, Lennart Yngve, 3,764,295.

Bennett, Robert B.; and Waling, Stephen J., to Dow Chemical Company, The. Method of preparing arched structures. 3,763,618, Cl. 52-741.000.

Benson, Gustav E.; and Taylor, Everett W., to Owens-Corning Fiberglas Corporation. Apparatus for cleaning and texturing linear material. 3,763,526, Cl. 28-1.400.

Benz, George W.: *See—*
McCartney, James S., 3,764,984.

Bergemann, Horst: *See—*
Eaves, Dennis Robert; and Bergemann, Horst, 3,764,152.

Berger, Milton: *See—*
Yovanovich, Joseph T., 3,763,999.

Bergeron, John A.; and Slusarczuk, George M. J., to General Electric Company. Disk flotation determination of catalase activity. 3,764,479, Cl. 195-103.50r.

Bergland, John; and Gould, Joseph C., to Du Pont de Nemours, E. I., and Company. Method of preventing polyurethane sealant from gelling prematurely in containers. 3,763,624, Cl. 53-37.000.

Bergmeyer, Hans Ulrich; and Bernt, Erich, to Boehringer Mannheim Gesellschaft mit beschrankter Haftung. Stabilized enzymatic test reagents. 3,764,478, Cl. 195-99.000.

Bergomi, Luciano, to Industrie Pirelli S.p.A. Breaker structure including glass fiber for radial tire. 3,763,912, Cl. 152-361.0dm.

Bergstrom, Lars Jonas; Buchi, Nils Harje; Hultman, Erik Helmer; Josephson, Bertil August; Vinnars, Erik; Dahlinder, David Georg; and Furst, Peter, to Aktiebolag Astra. Amino acid mixture for use in treatment of uremic conditions. 3,764,703, Cl. 424-319.000

Berlin, Milton: *See—*
Rheingold, Lawrence M.; and Berlin, Milton, 3,764,276.

Berlincourt, Don A., to Vernitron Corporation, mesne. Piezoelectric starter and ballast for gaseous discharge lamps. 3,764,848, Cl. 315-55.000.

Bernhardt, Gunther, to Dynamit Nobel Aktiengesellschaft. Metallizing of plastic materials. 3,764,488, Cl. 204-38.00b.

Berni, Rene P., to GAF Corporation. Process for removing polyvinyl halide residues from processing equipment. 3,764,384, Cl. 134-12.000.

Bernklau, Xaver: *See—*
Kramer, Heinrich; Butz, Josef; Muller, Richard; Thoma, Ludwig; Pollmann, Johann; Zielbauer, Hans; and Bernklau, Xaver, 3,764,431.

Bernt, Erich: *See—*
Bergmeyer, Hans Ulrich; and Bernt, Erich, 3,764,478.

Berry, Richard D.: *See—*
Turner, Robert J.; Booth, David L.; and Berry, Richard D., 3,764,273.

Bert, Paul A.; Jedynak, Leo; and Guif, Stanley E., to Oak Electro/Netics Corporation. Security system including means for polling the premises to be protected. 3,765,016, Cl. 340-408.00r.

Besel, Fred A.; and Setzer, William C., to Olin Corporation. Process for obtaining aluminum alloy conductor. 3,763,686, Cl. 72-364.000.

Betchelt, Rodi; and Reynolds, Clifton J., to Aerojet-General Corporation. Fluid-operable linear actuators. 3,763,747, Cl. 92-33.000.

Bethlehem Steel Corporation: *See—*
Smith, Marvin O., Jr., 3,764,260.

Betschart, Robert J.; and Brown, John S., to FMC Corporation. Independent mold frozen confection machine. 3,763,661, Cl. 62-345.000.

Betts, James F.: *See—*
Wainer, Eugene; and Betts, James F., 3,764,334.

Betz Laboratories, Inc.: *See—*
Stern, Arthur M.; and Gasner, Lawrence L., 3,764,014.

Bezemek, Vladislav: *See—*
Bartos, Karel; and Bezemek, Vladislav, 3,763,499.

Bhuta, Pravin G.; and Aprahamian, Robert, to TRW Inc. Pulsed acousto-optical echo imaging method and apparatus. 3,763,693, Cl. 73-67.900.

Biasotti, Joseph Brian, to Texaco Inc. Motor fuel composition. 3,764,281, Cl. 44-62.000.

Bideau, Max A.; Chauveton, Charles E.; Fruchard, Alain; and Laurens, Marc, to Eastman Kodak Company. Printing from color transparencies. 3,764,212, Cl. 355-100.000.

Bienenfeld, Myrou, to Magic Mold, Inc. Adjustable support garment. 3,763,866, Cl. 128-558.000.

Billman, Kenneth W.; and Leonard, Eugene T., to United States of America, National Aeronautics and Space Administration. Alignment apparatus using a laser having a gravitationally sensitive cavity reflector. 3,764,220, Cl. 356-153.000.

Bingley, Donald W., to Raytheon Company. Vector addition sine wave power control using single inverter and return of energy to inverter source. 3,764,887, Cl. 321-45.00r.

Binzer, Thomas J., to General Electric Company. Lighted control console with information center. 3,764,793, Cl. 240-2.0pa.

Birkeland, Stephen P., to Minnesota Mining and Manufacturing Company. Photothermic silver halide element containing mercuris soap and a color-forming coupler. 3,764,328, Cl. 96-67.000.

Bischof und Klein: *See—*
Konerman, Fritz, 3,764,251.

Bishop Eaves, & Sons, Limited: *See—*
Eaves, Dennis Robert; and Bergemann, Horst, 3,764,152.

Bishop, John Larry, to DLM, Inc. Pit-type dock leveler. 3,763,514, Cl. 14-71.000.

Bishop, John W.: *See—*
Robinson, Ernest B.; Ehrlich, Shelton; and Bishop, John W., 3,763,830.

Bittermann, Veit, to Dynamit Nobel Aktiengesellschaft. Pneumatic pump. 3,764,235, Cl. 417-118.000.

B.I.X. Limited: *See—*
Redmayne, Ian G., 3,764,806.

Bixler, Kenneth D.: *See—*
Reifers, Richard F.; and Bixler, Kenneth D., 3,764,057.

Blackburn, Horace D. Container stall interchange. 3,764,028, Cl. 214-38.0cc.

Blackman, Robert J., to Eastman Kodak Company. Bimodal film cutter adapted to handle different film widths. 3,763,728, Cl. 83-210.000.

Blade Hulls, Inc.: *See—*
Payne, Peter R., 3,763,810.

Blakeslee, Daniel Leo, to Stacor Corporation. Automatic fastening machine. 3,763,547, Cl. 29-430.000.

Blank, Stuart Lawrence; Lecraw, Roy Conway; Levinstein, Hyman Joseph; Tien, Ping King; Varnerin, Lawrence John, Jr.; and Wemple, Stuart Harry, to Bell Telephone Laboratories, Incorporated. Optical waveguide devices using single-crystal garnet films. 3,764,95, Cl. 350-96.0wg.

Blau, Philip; and Zellner, Georg J. Apparatus for continuously measuring the temperature of molten metal. 3,763,704, Cl. 73-359.000.

Blecher, Stephen, to Honeywell Inc. Magazine. 3,764,206, Cl. 353-21.000.

Bleier, Gerhard: *See—*
Strauch, Ernst; and Bleier, Gerhard, 3,763,543.

Blejean, Claude; Bourdoncle, Bernard; and Malmaison, Rueil, to Institut Francais du Petrole, des Carburants et Lubrifiants. Lubricating compositions. 3,764,534, Cl. 252-42.700.

Blets, Moos G. J.: *See—*
Mookherjee, Braja O.; and Blets, Moos G. J., 3,764,349.

Bley, Frederick O., to Optical and Electronic Research, Inc. Laminator. 3,764,441, Cl. 156-555.000.

Bleyle, Wilh., KG: *See—*
Merkle, Eberhard, 3,764,773.

Blick, David C.; Snow, Kenneth A.; and Vandewarker, Richard, to Bausch & Lomb Incorporated. Interferometric apparatus. 3,764,216, Cl. 356-106.000.

Bliss, John W., to Starline, Inc. Ground engaging rotary baler. 3,763,636, Cl. 56-16.400.

Block, Jacob; Shoup, Robert Donald; Laine, Norman Raymond; and Triggiani, Leonard Vincent, to Grace, W. R., & Co. Process for the

formation of metal carbide and metal carbide plus carbon microspheres. 3,764,550, Cl. 252-301.10r.

Blodgett, Jerry A.: *See—*
Patten, Raymond A.; and Blodgett, Jerry A., 3,764,217.

Blom, Ingvar Gustav Axel; and Ivarsson, Paul Lennart, to Hoganas Aktiebolag. Roller for operation under high temperatures. 3,763,533, Cl. 29-132.000.

Blomberg, Folke Ivar, to Husqvarna Vapenfabriks Aktiebolag. Vibrationless machine. 3,763,716, Cl. 74-604.000.

Blomberg, Theodore G. Inserter for intra-uterine contraceptive device. 3,763,856, Cl. 128-127.000.

Blore, William E.; Zivanovic, Srbislav; and Charest, Bernard, to United States of America, Air Force. Stripline video pulse generator. 3,764,830, Cl. 307-260.000.

Blum, Joseph M.; and Shih, Kwang K. S., to International Business Machines Corporation. Open tube diffusion in III-V compounds. 3,764,414, Cl. 148-189.000.

Blythe, Edward A.; Gelb, Allan S.; and La Velle, Donald L., to American Smelting and Refining Company. Copper base alloy. 3,764,306, Cl. 75-157.500.

Bodemuller, Robert, Jr., to Texaco Inc. Solvent dewaxing process. 3,764,517, Cl. 208-33.000.

Bodolay, William A. Bag loader. 3,763,628, Cl. 53-189.000.

Boehringer Mannheim Gesellschaft mit beschrankter Haftung: *See—*
Bergmeyer, Hans Ulrich; and Bernt, Erich, 3,764,478.
Jaworek, Dieter, 3,763,879.

Boeing Company, The: *See—*
Davis, Huth J., 3,763,818.

Boekels, Hans, Dr., & Co.: *See—*
Scheda, Gerhard, 3,764,860.

Boettcher, Stephen A., to Speedfam Corporation. Method of finishing flat surfaces. 3,763,602, Cl. 51-317.000.

Bohlen, Harald; Engelke, Helmut; and Landrock, Jurgen, to International Business Machines Corporation. Methods of testing the continuity of an electrical conductor by use of an electron beam. 3,764,898, Cl. 324-51.000.

Bohnke, Botho: *See—*
Bohnke, Botho; and Diers, Paul (said Diers assor. to said), 3,764,012.

Bohnke, Botho; and Diers, Paul, said Diers assor. to said Bohnke, Botho. Automatically operable two-stage biological compact clearing installation. 3,764,012, Cl. 210-195.000.

Boice, William Knight, to General Electric Company. Stabilizing means for an A-C motor drive. 3,764,872, Cl. 318-227.000.

Boise Cascade Corporation: *See—*
Zemanek, Rudolph, 3,764,005.

Boivin, Joseph J. R.: *See—*
Hamilton, Douglas D.; Boivin, Joseph J. R.; and Benedetto, Domenico, 3,763,905.

Bokros, Jack C., to United States of America, Atomic Energy Commission. Carbon-silicon coating alloys for improved irradiation stability. 3,764,469, Cl. 176-67.000.

Bolza-Schunemann, Hans-Bernhard, to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft. Sheet-feeding device for printing presses. 3,764,128, Cl. 271-51.000.

Bonas Machine Company, Limited: *See—*
Griffith, John Dalton, 3,763,897.

Bonati, Attilio, to Dott. Inverni & Della Beffa S.p.A. Aluminum salts of 3-acetyl-18β-glycyrrhetinic acid. 3,764,618, Cl. 260-448.00r.

Bonaventura, Joseph J.; and Harshbarger, Raymond J., to Xerox Corporation. Corona generator. 3,764,866, Cl. 317-262.00a.

Bond, William C., Jr.; and Wahlborg, Harold J., to Copolymer Rubber & Chemical Corporation. Alpha-olefin interpolymers formed with unsaturated organo silanes. 3,764,589, Cl. 260-80.710.

Bonneville, Gerald D.; Hetke, Adolf; and Free, William N., to General Motors Corporation. Method of friction welding with floating workpiece fixture. 3,763,549, Cl. 29-470.300.

Boose, Robert Carl. I-type segmented finned tube and its method of manufacture. 3,764,774, Cl. 219-62.000.

Booth, David L.: *See—*
Turner, Robert J.; Booth, David L.; and Berry, Richard D., 3,764,273.

Borg-Warner Corporation: *See—*
Collier, Donald W.; Hoppesch, Joseph P.; and Mamo, Anthony C., 3,764,270.

Bornstein, Norman S.; and De Crescente, Michael A., to United Aircraft Corporation. Protective coatings for metal substrates. 3,764,397, Cl. 148-6.000.

Bosch, Robert, Elektronik G.m.b.H.: *See—*
Bottcher, Lutz; and Heyne, Karl-August, 3,764,745.

Bosch, Robert, Fernsehanlagen G.m.b.H.: *See—*
Dieter-Schneider, Hans; Treusch, Georg; and Sacher, Christian, 3,764,735.

Bosch, Robert, G.m.b.H.: *See—*
Eblen, Ewald, 3,764,076.
Fournell, Hans-Dieter; Adler, Karl-Heinz; and Locher, Johannes, 3,763,744.

Boschetti, Eugene; Molho, Darius; and Fontaine, Louis, to Lipha, Lyonnaise Industrielle Pharmaceutique. Rodenticidal compositions containing 4-hydroxy coumarins. 3,764,693, Cl. 424-281.000.

Bossert, Friedrich; and Vater, Wulf, to Bayer Aktiengesellschaft. Composition and methods for effecting coronary dilation using cyanophenyl-1,4-dihydropyridine derivatives. 3,764,683, Cl. 424-263.000.

Bottcher, Lutz; and Heyne, Karl-August, to Bosch, Robert, Elektronik G.m.b.H. Multiple stage hearing aid transistor amplifier having signal voltage controlled frequency dependent network. 3,764,745, Cl. 179-1.00f.

Bottcher, Winfried, to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Austrustungen. Apparatus for stitching sheet materials. 3,763,798, Cl. 112-21.000.

Bottcher, Winfried, to VEB Polygraph Leipzig. Method for connecting superimposed layers of sheet material and apparatus for carrying out the method. 3,763,799, Cl. 112-21.000.

Bourdoncle, Bernard: *See—*
Blejean, Claude; Bourdoncle, Bernard; and Malmaison, Rueil, 3,764,534.

Bouron, Jean-Pierre: *See—*
Dansac, Jean; Picciotto, Robert; and Bouron, Jean-Pierre, 3,764,980.

Bous, Karl; Rosenkranz, Dieter; and Gorgen, Kurt, to Rosenkranz & Co., GmbH, Firma. System for bulking yarn. 3,763,669, Cl. 68-5.00d.

Boutillier, Pierre Emile, to Societe Anonyme Ugine Kuhlmann. Method for extruding profiled sections of expanded thermoplastic material having an integral skin. 3,764,642, Cl. 264-47.000.

Bouvier, John J.: *See—*
Schwarzkopf, Henry; and Bouvier, John J., 3,763,601.

Bowers, Clarence A.; Kimbrell, James P.; and Williamson, James R., to Monsanto Company. Process for dyeing polyester fibers with disperse dyestuffs. 3,764,264, Cl. 8-179.000.

Boyle, Gerald P., to Leeds & Northrup Company. Immersion thermocouple. 3,764,395, Cl. 136-234.000.

Bozzi, Ann R. Sewing machine foot cording device. 3,763,801, Cl. 112-139.000.

Brabo Corporation S.A.N.V.: *See—*
Den Ouden, Alfons Adriaan, 3,763,592.

Bragole, Robert A., to USM Corporation. Process for coating polymeric surfaces. 3,764,370, Cl. 117-47.00a.

Braithwaite, David G.: *See—*
Allain, Ronald J.; and Braithwaite, David G., 3,764,494.

Brana, Miguel Fernandez: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Barrachina, Antonio Vila-Coro, 3,764,594.

Branch, Jack P.; and Durham, Noel O. Implanted hearing aids. 3,764,748, Cl. 179-107.00e.

Brandt, Joachim, to Apparatebau Rothemuhle Brandt & Kritzler. Device for heating or drying dust-like material. 3,764,258, Cl. 432-107.000.

Branson Instruments Incorporated: *See—*
Fuller, David H.; and Rissolo, Herman A., 3,764,116.
Parry, Frank, 3,764,442.

Braumuller, Kurt: *See—*
Baumann, Karl-Friedrich; Hoff, Hans; and Braumuller, Kurt, 3,763,763.

Braun, Eberhard: *See—*
Wahnschaffe, Jurgen; Gwinner, Dietrich; Pattas, Konstantin; and Braun, Eberhard, 3,763,649.

Braun, Franz; and Ribnitz, Peter, to Gema AG Apparatebau. Monitoring apparatus for preventing spark-overs at a high voltage installation. 3,764,883, Cl. 321-11.000.

Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, to VEB Arzneimittelwerk Dresden. Amino alcohol derivatives of ajmaline. 3,764,599, Cl. 260-247.20r.

Braun, Sam Marcel: *See—*
Lacrampe, Roger Daniel; and Lacrampe, Thierry Arnaud Henri, 3,764,945.

Brautigam, Frank Charles, to Pennwalt Corporation. Centrifuge apparatus. 3,764,062, Cl. 233-7.000.

Breck, Louis William Jr.: *See—*
Champney, Rodney W.; Mc Keen, Leighton R.; and Breck, Louis William Jr., 3,763,802.

Brede, Uwe: *See—*
Bendler, Hellmut; Brede, Uwe; Gawlick, Heinz; and Roh, Peter, 3,763,782.

Breikorn, Barry A., to Lilly, Eli, and Company. Certain tetrazolo-(1,5-a) quinoline compounds as fungus control agents. 3,764,681, Cl. 424-258.000.

Breslow, Jeffrey D.; and Jaworski, Eugene, to Glass, Marvin, & Associates. Game apparatus. 3,764,136, Cl. 273-38.000.

Bresnick, Herbert, to Xerox Corporation. Ion lens recording system. 3,765,027, Cl. 346-74.0es.

Breveteam, S.A.: *See—*
Tesch, Guenter Horst, 3,764,450.

Brian, Michael A., to Udylite Corporation, The. Control system for conveying apparatus. 3,764,990, Cl. 340-172.500.

Bridenstine, Orville J., to Phillips Petroleum Company. Bag-forming machine. 3,764,434, Cl. 156-251.000.

Bridgeport Machines, Inc.: *See—*
Kreithen, Marvin L.; and Lawler, John J., 3,764,781.

Bridges, Denis Richard, to B & R Products Proprietary Limited. Multipurpose sheet metal folding press, punch, and nibbling machine. 3,763,689, Cl. 72-441.000.

Briggs, George S.; and Keith, Marvin W., Jr., to United States of America, Navy. Mal-assembly feature for explosive train fuzes. 3,763,785, Cl. 102-76.00r.

Bright, Rinehart S.; and Miles, Charles C., to Chrysler Corporation. Seat belt assembly. 3,764,161, Cl. 280-150.0sb.

Brissonneau, Pierre; and Couderchon, Georges, to Compagnie des Ateliers et Forges de la Loire. Magnetic steel process. 3,764,381, Cl. 117-234.000.

Britax (London) Limited: *See—*
Grime, Geoffrey, 3,764,159.

British Aircraft Corporation Limited: *See—*
Richardson, James Paul, 3,764,093.

British Titan Limited: *See—*
Hinley, John James; and Goldsbrough, Keith, 3,764,362.

Brobeck, Gosta Lennart. Electric alarm device. 3,764,971, Cl. 340-29.000.

Brocious, George D. Method of an apparatus for melting and refining glass. 3,764,287, Cl. 65-136.000.

Brock, Gregory C., Jr.: *See—*
Gambill, Ulysses T.; and Brock, Gregory C., Jr., 3,764,243.

Brodersen, Helmut, to Maschinenbau Ulm GmbH. Suspension for a ploughshare assembly of a grading machine. 3,763,938, Cl. 172-789.000.

Brolkhuis, John William: *See—*
Vogel, Pieter Elisa; and Brolkhuis, John William, 3,764,560.

Brooks, Everett G.; and Lewis, David O., to International Business Machines Corporation. Serial printer with bi-directional drive control. 3,764,994, Cl. 340-172.500.

Brosch, Leo; Fechner, Gerd; and Reichert, Eduard, to Transformatoren Union Aktiengesellschaft. Electromagnetic vibrator. 3,764,834, Cl. 310-17.000.

Brown, Albert C., to Addressograph-Multigraph Corporation. Independently adjustable multiple data recorder. 3,763,777, Cl. 101-269.000.

Brown, Charles D., to Sola Basic Industries, Inc. Universal wave guide flange. 3,764,170, Cl. 285-412.000.

Brown, Dale M., to General Electric Company. Glass melt-through diffusions. 3,764,411, Cl. 148-188.000.

Brown, Gerald V.; Coles, Willard D.; and Laurence, James C., to United States of America, National Aeronautics and Space Administration. Method of fabricating a twisted composite superconductor. 3,763,552, Cl. 29-599.000.

Brown, John R. Vacuum cleaner for vehicles. 3,764,232, Cl. 417-319.000.

Brown, John S.: *See—*
Betschart, Robert J.; and Brown, John S., 3,763,661.

Brown Oil Tools, Inc.: *See—*
Dinning, Robert W., 3,763,932.

Brumfield, Robert C. Blood oxygenator in combination with a low pressure heat exchanger. 3,764,271, Cl. 23-258.500.

Brunelle, Thomas E.: *See—*
Mizuno, William G.; Brunelle, Thomas E.; Rue, Larry M.; and Crecelius, Samuel B., 3,764,559.

Brunswick Corporation: *See—*
Copeland, Robert L.; Moorefield, Samuel A.; Beeler, David R.; and Chase, Vance A. (said Copeland and said Moorefield assors. to said), 3,764,449.

Bruttel, Beat: *See—*
Schmid, Eduard; Bruttel, Beat; Nascher, Reinold; and Egli, Rene, 3,764,007.

Bryan, William R.: *See—*
Ali, Wahid R.; and Bryan, William R., 3,764,569.

Brymer, Andrew Ellsworth, Jr., to Owens-Illinois, Inc. Falling gob deviation indicator. 3,764,289, Cl. 65-304.000.

Buchel, Karl-Heinz: *See—*
Draber, Wilfried; Regel, Erik; Buchel, Karl-Heinz; and Plempel, Manfred, 3,764,690.

Buchi, Nils Harje: *See—*
Bergstrom, Lars Jonas; Buchi, Nils Harje; Hultman, Erik Helmer; Josephson, Bertil August; Vinnars, Erik; Dahlinder, David Georg; and Furst, Peter, 3,764,703.

Buckbee-Mears Company: *See—*
Jacobus, Dan, 3,764,485.
Tinklenberg, Meryl W.; Morawetz, Peter L.; and Olson, Roger, 3,764,486.

Buckingham, Robert L.; Herd, Harold H.; and Sun, Theresa I., to International Business Machines Corporation. Method and apparatus for mixing fluids. 3,764,115, Cl. 259-24.000.

Bucyrus-Erie Company: *See—*
Dummer, Robert E., 3,764,111.

Buczek, Garl J.: *See—*
Skolnick, Michael L.; and Buczek, Garl J., 3,764,937.

Budd Company, The: *See—*
Gutnajer, Ludwik, 3,763,542.

Buese, George J., to Johnson & Johnson. Composite material having cementitious properties. 3,763,858, Cl. 128-156.000.

Bullivant, Kenneth W., to K-Tron Corporation. Modular batch weighing control system and method. 3,763,943, Cl. 177-1.000.

Burckhardt, Manfred H.; Lutze, Walter; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. Frequency transmitter, especially for brake slippage control installation of motor vehicles. 3,764,837, Cl. 310-168.000.

Burge, Anthony Robert: *See—*
Gray, Colin; and Burge, Anthony Robert, 3,764,133.

Burkart, Edward J. Livestock loading chute. 3,763,827, Cl. 119-82.000.

Burkhart, George N., Jr., to Duncan Electric Company. Box and mounting and connecting means for extremely heavy duty watt-hour meters. 3,764,858, Cl. 317-107.000.

Burland, Peter D.; Stephenson, James L.; and Stobart, Edward H., to Milchem Incorporated. Composition and process for the reduction of thermal degradation of aqueous drilling fluids. 3,764,530, Cl. 252-8.50c.

Burlington Industries, Inc.: *See—*
Joy, Raymond D., 3,763,702.
Leach, Jack, 3,763,497.

Burney, Ivan T., to Westinghouse Electric Corporation. Air conditioning condenser fan arrangement with condensate removal. 3,763,660, Cl. 62-280.000.

Burns, James R.: *See—*
Arff, John H.; and Burns, James R., 3,764,504.

Burns, Joseph P.; Feltzin, Joseph; and Koehn, Erich, to ICI America Inc. Flame-retardant, polyurethane coating compositions. 3,764,577, Cl. 260-45.70p.

Burroughs Corporation: *See—*
Paananen, Eugene E.; Csengery, Ladislao C.; and Barry, Richard J., 3,764,087.

Burton, Norman. Bubble dome vehicle roof top attachment. 3,764,179, Cl. 296-137.00r.

Busler, William R.: *See—*
Hsieh, Henry L.; Mueller, Francis X., Jr.; and Busler, William R., 3,764,639.

Butz, Josef: *See—*
Kramer, Heinrich; Butz, Josef; Muller, Richard; Thoma, Ludwig; Pollmann, Johann; Zielbauer, Hans; and Bernklau, Xaver, 3,764,431.

Buxbaum, Arne; and Kahlen, Horst, to Licentia Patent-Verwaltungs G.m.b.H. Control logic for switching rectifier systems. 3,764,885, Cl. 321-13.000.

Buzano, Michel, to Rhone-Poulenc-Textile, S.A., mesne. Novel high-bulk yarn. 3,763,643, Cl. 57-140.00j.

Byck, Joseph Sylvan: *See—*
Shaw, Richard Gregg; and Byck, Joseph Sylvan, 3,764,018.

Bysouth, Raymond; and Robertson, Peter Struan, to New Zealand Dairy Research Institute. Methods of pressing cheese. 3,763,769, Cl. 100-37.000.

C & W Sewing Machine: *See—*
Shuffield, Jack E., 3,763,806.

Cableform Limited: *See—*
Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, 3,764,870.

Cabut, Louis Antoine: *See—*
Kienzle, Jean Andre Paul; Hoille, Michel Ernest Antoine; and Cabut, Louis Antoine, 3,764,361.

Cadmus, Eugene L., to Ventron Corporation. Process for removal of soluble mercury residues from aqueous process streams. 3,764,528, Cl. 210-50.000.

Cadorin, Dante: *See—*
Thring, Meredith Wooldrige; Cadorin, Dante; and Ducato, Aldo, 3,764,667.

Caen, Claude Nephtale, to Societe Anonyme Francaise du Ferodo. Apparatus for controlling power transmitted by a group of N phase conductors. 3,764,890, Cl. 323-24.000.

Caldwell, Donald A.: *See—*
Dukek, William G.; and Caldwell, Donald A., 3,764,894.

Caldwell, John R.: *See—*
Barton, Kenneth R.; and Caldwell, John R., 3,764,374.

Calpis Shokuhin Kogyo Kabushiki Kaisha: *See—*
Inagami, Kaoru; Mitsui, Isamu; and Kando, Hiroaki, 3,764,710.

Calvin, John N., to Combustion Engineering, Inc. Flow twister. 3,764,470, Cl. 176-76.000.

Campari, Luigi: *See—*
Teagno, Wladimiro; and Campari, Luigi, 3,764,958.

Campbell, Harvey A. Counter assembly for conveyor. 3,763,981, Cl. 193-35.00r.

Canadian International Paper Company: *See—*
Histed, John A.; Lawford, William H.; McLeod, Murray J.; Wendeborn, Robert G.; and Catford, Dennis R., 3,764,463.

Canadian Patents and Development Limited: *See—*
Woodhams, Raymond T., 3,764,456.

Cannon, Maxwell R., to International Business Machines Corporation. Digital signal record systems. 3,765,005, Cl. 340-174.10g.

Canon Kabushiki Kaisha: *See—*
Takahashi, Isao; Fujii, Motoharau; Kawakubo, Kazuo; Agriga, Masso; and Sugiura, Susumu, 3,764,208.

Cap, Antonin: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Chrtek, Milan; and Cap, Antonin, 3,763,641.

Caplan, Lawrence; and Stern, Richard, to United States of America, Navy. Synchronous detection system. 3,764,924, Cl. 329-50.000.

Carbide Form Grinding, Inc.: *See—*
Perlman, Morris, 3,763,546.

Carbonniere, John G., to Ocean Labs Inc. Kelp derived feeds containing sequestered trace minerals mixed with sulfate salts. 3,764,341, Cl. 99-2.0cd.

Carefree International, Inc.: *See—*
Harden, Darrel G., 3,763,878.

Carlisle, Deni Richard, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Majesty's Government of the. Gas turbine engine combustion apparatus. 3,764,071, Cl. 239-132.500.

Carlson, Don H. Cementation tab. 3,763,566, Cl. 32-40.00r.

Carlson, Ronald H., to Hooker Chemical Corporation. Preparation of phosphates. 3,764,656, Cl. 423-311.000.

Carlstrom, Thomas L.; and Leavitt, Jack P., to American Manufacturing Company, Inc. Wrapping apparatus for bag packs. 3,763,629, Cl. 53-379.000.
Carnation Company: *See—*
Melnychyn, Paul; and Stapley, Ronald B., 3,764,711.
Carolina Narrow Fabric Company: *See—*
Nisbet, John L.; and Woodall, Hubert C., Jr., 3,764,448.
Caron, Lionel, to Bell Telephone Laboratories, Incorporated. Magnetic domain serial-to-parallel arrangement. 3,765,004, Cl. 340-174.0tf.
Carpigiani, Poerio C. Automatic ice-cream machine. 3,764,117, Cl. 259-107.000.
Carpigiani, Poerio C. Liquid and air mixing gear pump. 3,764,238, Cl. 418-15.000.
Carter, J. C., Company, The: *See—*
Carter, James C., 3,764,236.
Carter, James C., to Carter, J. C., Company, The. Modular pump. 3,764,236, Cl. 417-372.000.
Cartland, William H.; and Earnest, Ernest R. High speed single vane motor. 3,764,241, Cl. 418-138.000.
Casale, Ernest. V-drive transmission utilizing splash lubrication. 3,763,961, Cl. 184-11.00a.
Case, J. I., Company: *See—*
Symmank, William D., 3,764,185.
Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,764,791.
Castro, Rodolfo: *See—*
Hasslinger, Robert L.; Newton, William J.; Toscano, Esteban J.; and Castro, Rodolfo, 3,764,775.
Catena, Michael J.: *See—*
Coffey, Charles A.; and Catena, Michael J., 3,764,067.
Catford, Dennis R.: *See—*
Histed, John A.; Lawford, William H.; McLeod, Murray J.; Wendeborn, Robert G.; and Catford, Dennis R., 3,764,463.
Caule, Elmer J., to Olin Corporation. Method of producing tarnish resistant copper and copper alloys. 3,764,399, Cl. 148-6.15r.
Caule, Elmer J., to Olin Corporation. Method of producing tarnish resistant copper and copper alloys. 3,764,400, Cl. 148-6.160.
C.A.V. Limited: *See—*
Fenne, Ivor, 3,763,832.
Cegedur GP: *See—*
Peyraud, Serge; and Freiche, Jean, 3,763,924.
Ceilcote Company: *See—*
Klugman, Warren L., 3,764,034.
Celanese Corporation: *See—*
Plovan, Steven G., 3,763,779.
Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., 3,764,263.
Prinz, Roy H., 3,764,627.
Russo, Robert Victor, 3,764,576.
Zellner, Carl N.; and Steinmann, Henry W., 3,764,581.
Cenco Medical/Health Supply Corporation, mesne: *See—*
Bender, Charles E.; and Fraser, Douglas S., 3,764,836.
Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Roggero, Arnaldo; Vajna, Eugenio; and Cesca, Sebastiano, 3,764,588.
CF & I Steel Corporation: *See—*
Godfrey, Howard J.; Homa, Stephen W.; and Stott, Ronald J., 3,763,680.
Chadwell, James I. Flexible cleaner for the sole of a golf shoe. 3,763,578, Cl. 36-7.300.
Chalmers, Peter Denton: *See—*
Hyde, Mide Arthur; Chalmers, Peter Denton; and Mackie, Walter Blair, 3,763,614.
Chambers, Wayne L. Method of recovering metals. 3,764,490, Cl. 204-52.00r.
Chamlee, Cliff. Prefabricated all weather dome-type shelter. 3,763,608, Cl. 52-80.000.
Champney, Rodney W.; Mc Keen, Leighton R.; and Breck, Louis William Jr., to Farah Manufacturing Company, Inc. Pocket welting machine. 3,763,802, Cl. 112-121.120.
Chandler Evans Inc.: *See—*
Andersen, Joseph J., 3,763,745.
Chandler, William M.: *See—*
Helf, William, Jr.; and Chandler, William M., 3,764,995.
Chang, Wen-Hsuan; and Kaman, Andrew J., to PPG Industries, Inc. Transparent, impact-resistant poly(carbonate-urethane) laminates. 3,764,457, Cl. 161-183.000.
Charest, Bernard: *See—*
Blore, William E.; Zivanovic, Srbislav; and Charest, Bernard, 3,764,830.
Charpentier, Robert R. Insulating ring for particle accelerator tubes and acceleration tube including the same. 3,764,838, Cl. 313-63.000.
Chase, Vance A.: *See—*
Copeland, Robert L.; Moorefield, Samuel A.; Beeler, David R.; and Chase, Vance A., 3,764,449.
Chase-Shawmut Company, The: *See—*
Swain, Kenneth W. (said Swain assor. to said), 3,764,949.
Chaussy, Leon: *See—*
Wenzel, Werner; and Chaussy, Leon, 3,764,300.
Chauveton, Charles E.: *See—*
Bideau, Max A.; Chauveton, Charles E.; Fruchard, Alain; and Laurens, Marc, 3,764,212.
Chedister, Conkling: *See—*
Schwartz, Morris; Chedister, Conkling; and Beckman, Frank H., 3,764,203.
Chemical Construction Corporation: *See—*
Shah, Indravadan S., 3,764,654.
Chemical Detergents Co., Inc.: *See—*
Horn, Edward A.; Minesa, Irwin; and Rosten, Henry R., 3,763,631.
Chemische Fabrik Budenheim: *See—*
Frankenfeld, Klaus; and Gotzmann, Karl, 3,764,657.
Chemische Werke Munchen Otto Barlocher GmbH: *See—*
Rosenthal, Christian, 3,764,572.
Chen, Inan: *See—*
Mort, Joseph; Sharp. James H.; Bean, Lloyd F.; Chen, Inan; and Emerald, Robert L., 3,764,315.
Chevron Research Company: *See—*
Kitrell, James R., 3,764,562.
Kluksdahl, Harris E., 3,764,557.
Meyer, Jarold A., 3,764,519.
Rathborn, Richard P.; and Stanton, Garth M., 3,763,694.
Chicago Bridge & Iron Company: *See—*
Rothrock, Elmer Weyman, 3,764,037.
Chiesa, Peter J., Jr.: *See—*
Marks, Burton S.; and Chiesa, Peter J., Jr., 3,764,574.
Chiron, Bernard; and Duffau, Louis, to Societe Lignes Telegraphiques et Telephoniques. Adjustable aperture antenna employing dielectric and ferrimagnetic material. 3,765,021, Cl. 343-785.000.
Chiron, Bernard; and Duffau, Louis, to Societe Lignes Telegraphiques et Telephoniques. Antenna array with pattern compensation during scanning. 3,765,024, Cl. 343-854.000.
Christensson, Od Wikar, to Christenssons Maskiner & Patenter Aktiebolag. Apparatus for heat sealing a closure on a package comprising a die with sloping sides. 3,764,443, Cl. 156-581.000.
Christenssons Maskiner & Patenter Aktiebolag: *See—*
Christensson, Od Wikar, 3,764,443.
Christie, Sidney A.: *See—*
McLean, William; and Christie, Sidney A., 3,764,965.
Christman, Brian B., to Dixon, Joseph, Crucible Company, The. Refractory sanitary ware setter. 3,764,261, Cl. 432-258.000.
Chromalloy American Corporation, The: *See—*
Speirs, Kenneth K.; and Weinstein, Martin, 3,764,373.
Chrtek, Milan: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Chrtek, Milan; and Cap, Antonin, 3,763,641.
Chrysler Corporation: *See—*
Bright, Rinehart S.; and Miles, Charles C., 3,764,161.
Orris, Stephen J., 3,764,861.
Chupp, John Paul, to Monsanto Company. Insecticidal compounds and methods of combatting insects using phenyl-N-(1-alkenyl)-N-methylcarbamates. 3,764,695, Cl. 424-300.000.
Ciba-Geigy AG: *See—*
Hope, Paul; Martin, Richard John; and Stark, Bernard Peter, 3,764,584.
Langley, Robert, 3,764,360.
Ciba-Geigy Corporation: *See—*
Knusli, Enrico; and Varsanyi, Denis, 3,764,678.
Riccio, Pasquale R., 3,764,046.
Traber, Walter; and Weiss, Anton G., 3,764,696.
Ciba-Geigy Marienberg GmbH: *See—*
Lorenz, Joachim, 3,764,582.
Civardi, Frank Peter; and Kuenstler, Hans Georg, to Inmont Corporation. Surface treatment of microporous surface of sheet material and product produced. 3,764,363, Cl. 117-10.000.
Clark, Alex L., Limited: *See—*
Ramsdall, Roy, 3,763,759.
Clark, Anthony Philip, to B & K Machinery International, Limited. Differential drive for tension rollers. 3,764,050, Cl. 226-25.000.
Clark Equipment Company: *See—*
Ward, William H., 3,764,032.
Clark, Jared W. Method of making NH_4-NO_3-H_2O-FO composition. 3,764,421, Cl. 149-46.000.
Clark, Winifred. Hinge frame. 3,763,918, Cl. 160-371.000.
Clarke, Henry C. N. Laparoscopy instruments and method for suturing and ligation. 3,763,860, Cl. 128-334.000.
Clay, Robert A. Trash compactor apparatus. 3,763,773, Cl. 100-229.00a.
Clement, Frank John; and Richardson, Berton Leigh, to Bell Telephone Laboratories, Incorporated. Coordinate detection system. 3,764,813, Cl. 250-221.000.
Clopay Corporation: *See—*
Gossling, Robert C., 3,763,916.
Close, James Garth. Parking brake for a cart or the like. 3,763,966, Cl. 188-5.000.
Closse, Annemarie; and Thiele, Hans Hermann, to Sandoz, Ltd. Antibiotic SL 3440. 3,764,671, Cl. 424-122.000.
Clostermann, Friedrich, to Trilux-Lenze KG. Cover plate for a lamp. 3,764,800, Cl. 240-106.00r.
C.M.H., Inc.: *See—*
Nell, William C., 3,763,617.
Coad, Brian C.; and Palmer, Raymond B., to Airco, Inc. Method and apparatus for purifying metal. 3,764,297, Cl. 75-10.000.
Cochardt, Alexander R.: *See—*
Cochardt, Philip A.; Cochardt, Alexander R.; and Cochardt, Alexander W., 3,764,539.
Cochardt, Alexander W.: *See—*
Cochardt, Philip A.; Cochardt, Alexander R.; and Cochardt, Alexander W., 3,764,539.

Cochardt, Philip A.; Cochardt, Alexander R.; and Cochardt, Alexander W., to Community Building Association of Washington, Indiana, Inc. Flexible ferrite permanent magnet and methods for its manufacture. 3,764,539, Cl. 252-62.540.

Cockburn, Thomas: *See—*
Nagel, Raymond; Wharton, Norman; and Cockburn, Thomas, 3,763,814.

Codman & Shurtleff, Inc.: *See—*
Reimels, Harry G., 3,764,427.

Coffey, Charles A.; and Catena, Michael J., to Harris Paint Company. Method for decorating surfaces. 3,764,067, Cl. 239-1.000.

Cogar Corporation: *See—*
Luttle, James W., 3,764,379.

Cohen, Leo: *See—*
Paivinen, John O.; Rubinstein, Richard B.; Cohen, Leo; and Baker, Lamar T., 3,765,003.

Cohen, Ronald S.; and Dawley, James M., to Behavioral Controls, Inc. Programmed information transmittal apparatus. 3,763,575, Cl. 35-9.00a.

Cohen, Samuel W. Baseball game. 3,764,139, Cl. 273-88.000.

Coirre, Paul: *See—*
Denis, Jean-Claude; and Rambaud, Jerome, 3,764,701.

Coleman, Harold R., to Tee-Pak, Inc. Printing on cellulose films. 3,764,350, Cl. 117-145.000.

Coles, Willard D.: *See—*
Brown, Gerald V.; Coles, Willard D.; and Laurence, James C., 3,763,552.

Colgate-Palmolive Company: *See—*
Natali, Remigio; and Giombini, Guiseppe, 3,764,542.

Collier, Donald W.; Hoppesch, Joseph P.; and Mamo, Anthony C., to Borg-Warner Corporation. Breath testing system. 3,764,270, Cl. 23-255.00e.

Collins, Joseph C.; and Rosi, David, to Sterling Drug Inc. Preparation of 1-aminoalkylamino-9-orothioxanthene-4-carboxaldehydes. 3,764,612, Cl. 260-328.000.

Collins Radio Company: *See—*
Melvin, William J., 3,764,743.
Robinson, Eugene A., 3,764,932.

Collins, Robert H., to United States of America, Army. Testing tool for determining the boresight retention of weapons brackets and night vision sights. 3,764,219, Cl. 356-138.000.

Colombo, Gregory R.; and Waldo, Russell W., to Ideal Security Hardware Corporation. Chain door lock. 3,763,673, Cl. 70-93.000.

Colson, George P., to Engineering Field Services. Means for eliminating roll of tunneling shield. 3,763,657, Cl. 61-85.000.

Combustion Engineering, Inc.: *See—*
Calvin, John N., 3,764,470.
Kosky, Richard P.; and Averill, Preston W., Jr., 3,764,736.

Commercial Solvents Corporation: *See—*
Wehrmeister, Herbert L.; and Urry, Wilbert H., 3,764,614.

Commissariat a l'Energie Atomique: *See—*
Croso, Hubert; Prost, Gerard; Queffelec, Andre; and Sole, Jean, 3,764,828.
Dean, Guy, 3,764,551.

Community Building Association of Washington, Indiana, Inc.: *See—*
Cochardt, Philip A.; Cochardt, Alexander R.; and Cochardt, Alexander W., 3,764,539.

Compagnie des Ateliers et Forges de la Loire: *See—*
Brissonneau, Pierre; and Couderchon, Georges, 3,764,381.

Compagnie Francaise des Petroles: *See—*
Menage, Georges H., 3,763,936.

Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Montagne, Jean Bernard, 3,763,911.

Compagnie Industrielle des Telecomunications Cit-Alcatel: *See—*
Gorinas, Guy; and Drnu, Claude, 3,763,821.

Comten: *See—*
Schulze, Fritz H., 3,764,987.

Condux International, Inc.: *See—*
Elder, Clarence H.; and Jugle, Leonard L., 3,764,151.

Conn. C. G., Ltd.: *See—*
Southard, James S., 3,764,722.

Conroy, Thomas Francis; and Ringwall, Carl Gustave, to General Electric Company. Fabrication process for porous metal bearings. 3,763,534, Cl. 29-148.40b.

Consoli, Claudio C. Roller or ball mill for the refining of cocoa and chocolate and the grinding of paints, enamels and the like. 3,764,079, Cl. 241-110.000.

Consolidated Controls Corporation: *See—*
Standke, Helmut, 3,764,172.

Consolidated Foods Corporation: *See—*
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Conte, Apollonio: *See—*
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Continental Can Company, Inc.: *See—*
Hilgenbrink, John T., 3,763,807.

Continental Drilling Company: *See—*
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Continental Oil Company: *See—*
Hunt, Mack W.; and Sias, Roy C., 3,764,533.

Contracting & Material Company: *See—*
Levitt, Merle E., 3,763,942.

Control Data Corporation: *See—*
Huard, George Phillip, 3,764,921.

Cooley, Jerry A. Method and means for joining sheet members. 3,763,513, Cl. 11-1.00a.

Coon, Warren P., to Varian Associates. Magnetic shielding and X-ray image intensifier tube using same. 3,764,841, Cl. 313-153.000.

Copeland, Robert L.; Moorefield, Samuel A.; Beeler, David R.; and Chase, Vance A., said Copeland and said Moorefield assors. to said Brunswick Corporation. Method of making a polyimide and laminated product made therefrom. 3,764,449, Cl. 161-88.000.

Copolymer Rubber & Chemical Corporation: *See—*
Bond, William C., Jr.; and Wahlborg, Harold J., 3,764,589.

Copper Refineries Pty., Limited: *See—*
Perry, Ian James; Watson, Bruce Dunstan; Lagerche, John Geoffrey; Denman, George Alan; Irvine, Norman William; Goding, Thomas Joseph; and Moffett, Graham Douglas, 3,763,915.

Copperhead Steel Company: *See—*
Zeiters, Donald L., 3,763,695.

Corning Glass Works: *See—*
Platt, David M. H., 3,764,484.
Platt, David M. H., 3,764,506.

Corrigan, Richard A.: *See—*
Jacobs, John H.; and Corrigan, Richard A., 3,764,368.

Cortner, William C., to Alley-Johnson Company. Cage-type livestock duster. 3,763,829, Cl. 119-159.000.

Costa, Edward; Lantz, Robert; and Seals, William O., to United States of America, Army. Low energy propellant producing essentially non-reactive gaseous exhaust products. 3,764,416, Cl. 149-18.000.

Costa, Robert B.; Wichman, William J.; and Morgan, Norman D., to Rain Bird Sprinkler Mfg., Corporation. Sprinkler head mounting means. 3,764,073, Cl. 239-230.000.

Couderchon, Georges: *See—*
Brissonneau, Pierre; and Couderchon, Georges, 3,764,381.

Couling, Sidney L.: *See—*
Behr, Raymond D.; Couling, Sidney L.; and Alfrey, Turner, Jr., 3,763,921.

Coulter, Albert W., Jr.; Gibson, Daniel L.; and Nimerick, Kenneth H., to Dow Chemical Company, The. Method of temporarily sealing a permeable formation. 3,763,934, Cl. 166-294.000.

County Commercial Cars Limited: *See—*
Eggleton, Geoffrey Donald; and Jones, Eric Douglas, 3,763,948.

Courson, Richard B., to Almo Manifold and Tool Company. Hydraulic manifold system. 3,763,889, Cl. 137-608.000.

Coventry Climax Engines Limited: *See—*
Neal, Eric R., 3,763,974.

Cox, Donald Clyde; and Reudink, Douglas Otto John, to Bell Telephone Laboratories, Incorporated. Dynamic program control for channel assignment in mobile communications systems. 3,764,915, Cl. 325-53.000.

Craddock, Mike. Oil field secondary. 3,764,854, Cl. 317-68.000.

Creamer, Adelene B.; and Creamer, Marven. Clothes hanger support and storage apparatus. 3,764,019, Cl. 211-49.00r.

Creamer, Marven: *See—*
Creamer, Adelene B.; and Creamer, Marven, 3,764,019.

Crecelius, Samuel B.: *See—*
Mizuno, William G.; Brunelle, Thomas E.; Rue, Larry M.; and Crecelius, Samuel B., 3,764,559.

Crooks, James W. Two speed transmission with brake. 3,763,978, Cl. 192-4.00a.

Crosfield Business Machines Limited: *See—*
Gray, Colin; and Burge, Anthony Robert, 3,764,133.

Croso, Hubert; Prost, Gerard; Queffelec, Andre; and Sole, Jean, to Commissariat a l'Energie Atomique. Switch for a superconducting circuit. 3,764,828, Cl. 307-245.000.

Cross, Ronald William, to Rotax Limited. Motor powered wheels for aircraft. 3,764,094, Cl. 244-50.000.

Crouch, George D.; and Muggenborg, Stanley D., to Dow Chemical Company, The. Method of forming a dispensing package. 3,763,623, Cl. 53-32.000.

Crowder, Thomas E. Hammer construction. 3,763,906, Cl. 145-30.00a.

Crownhurst, James Arthur, to Hawker Siddley Dynamics Limited. Improvements in or relating to control systems. 3,764,091, Cl. 244-3.220.

Csapo, Frank; Filipek, Stanley J.; Horton, Richard H.; and Kull, Richard A., to Stirling Homex Corporation. Jacking means for raising buildings of modular construction. 3,764,110, Cl. 254-105.000.

Csengery, Ladislao C.: *See—*
Paananen, Eugene E.; Csengery, Ladislao C.; and Barry, Richard J., 3,764,087.

Cubberly, Walter E., Jr., to Schlumberger Technology Corporation. Well bore data-transmission apparatus with debris clearing apparatus. 3,764,969, Cl. 340-18.0nc.

Cuq, Pierre, to Agence Nationale de Valorisation de la Recherche. Method and machine for narrowing tubular articles. 3,763,688, Cl. 72-402.000.

Curkov, Konstantin Stepanovich: *See—*
Sudnishnikov, Boris Vasileivich; Kostylev, Alexander Dmitrievich; Curkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; Klimashko, Vladimir Vasilievich; and Plavskikh, Vladimir Dmitrievich, 3,763,939.

Curry, Kenneth V.: *See—*
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Daghe, Joseph L.: *See—*
Leopold, Wilbur R., Jr.; Smith, John J.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Daghe, Joseph L., 3,763,880.

Dahlin, Stanley V., to Swingline, Inc. Staple-removing device. 3,764,108, Cl. 254-28.000.
Dahlinder, David Georg: *See—*
Bergstrom, Lars Jonas; Buchi, Nils Harje; Hultman, Erik Helmer; Josephson, Bertil August; Vinnars, Erik; Dahlinder, David Georg; and Furst, Peter, 3,764,703.
Dailey, Earl E.; Barton, Jerry M.; Minnis, Ralph L.; and Baltazzi, Evan S., to Addressograph-Multigraph Corporation. Organic photoconductive material comprising poly (vinyl-monoiodo benzocarbazole). 3,764,316, Cl. 96-1.600.
Daimler-Benz Aktiengesellschaft: *See—*
Burckhardt, Manfred H.; Lutze, Walter; and Schwerdt, Paul, 3,764,837.
Dale, Alan M.; Martindale, David L.; and Mursinna, Richard C., to Ametek, Inc. Cryogenic liquid storage systems. 3,764,036, Cl. 220-15.000.
Damgaard, Lavritz Gudmund: *See—*
Duhring, Ornolf; and Damgaard, Lavritz Gudmund, 3,763,611.
Damon Corporation: *See—*
Kosowsky, David I.; Ferrari, Andres; and Hurtig, Carl R., 3,764,268.
Dana Corporation: *See—*
Sink, William Howard, 3,763,977.
Danahy, Philip J. Flexing hydrofoil. 3,763,811, Cl. 114-66.50h.
Dancsik, Joseph J. Tool holder. 3,763,531, Cl. 29-80.00r.
Danielson, Oscar L. Automotive vehicle. 3,763,945, Cl. 180-6.660.
Danilov, Nikolai Anatolievich; and Zharikov, Gennady Petrovich. Method of producing anisotropic magnetic films. 3,764,382, Cl. 117-238.000.
Danner, Bill A.: *See—*
Orr, Bobby J.; Danner, Bill A.; and Parks, Roby A., 3,764,184.
Danree, Bernard: *See—*
Malen, Charles; Danree, Bernard; and Desnoyers, Pierre, 3,764,702.
Dansac, Jean; Picciotto, Robert; and Bouron, Jean-Pierre, to Thomson-CSF. Symbol recognition system particularly for alpha-numeric characters. 3,764,980, Cl. 340-146.3ed.
Dari-Spray Products, Inc.: *See—*
Tighe, Peter R., 3,763,828.
Darley, Henry C. H.; and Place, Morris C., Jr., to Shell Oil Company. Well operation for recovering oil from produced sand. 3,764,008, Cl. 210-73.000.
Darnell, William R.: *See—*
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Deal, Samuel Broughton, to RCA Corporation. Cathode-ray-tube-yoke combination with at least two spaced bodies of organic thermoplastic material therebetween and a method of making said combination. 3,764,740, Cl. 178-7.800.
Dean, Guy, to Commissariat a l'Energie Atomique. Method of manufacture of sintered hypostolthiometric oxides. 3,764,551, Cl. 252-301.10r.
Dean, Robert Earl; Feldman, Martin; Griffin, Jack Page; and Warner, Arthur Woodward, Jr., to Bell Telephone Laboratories, Incorporated. Reentrant acousto-optic light modulators and deflectors. 3,764,196, Cl. 350-161.000.
Debernardis, Joseph N.; Slobbe, Walter W.; and Speigel, Kenneth, to GTE Sylvania Incorporated. Apparatus for coating a pattern mask for use in forming a color CRT screen structure. 3,764,514, Cl. 204-299.000.
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Depoubier, Henri; and Moelanis, Felix Jan, to Agfa-Gevaert N.V. Photoconductive compositions spectrally sensitized with N-substituted 2-aminothiophene dyes. 3,764,317, Cl. 96-1.700.
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Dooley, James L.; and Harasta, Clarence J., to McCulloch Corporation. Lightweight chain saw with engine restarting system and method and apparatus for restarting a warm internal combustion engine. 3,763,842, Cl. 123-179.00s.
Dornbusch, Paul E.; and Johnson, Thomas D., to General Electric Company. Apparatus for automatic control of product fill dimension. 3,763,678, Cl. 72-9.000.
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Evans, Ross Hugh; Seltzer, Daniel Arron; and Young, Robert Leonard, to Gamon-Calmet Industries, Inc. Telemetering remote recording unit. 3,764,918, Cl. 328-37.000.
Evers, William J.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Cyclopentapyrimidines. 3,764,601, Cl. 260-251.00a.
Eynon, George Thomas; Shoesmith, Terry; and Standen, Desmond Leonard Ernest, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Gyroscope processing apparatus. 3,763,709, Cl 74-5.470.
Eynon, John E. Limbing head. 3,763,904, Cl. 144-2.00z.
Fabrizio, Gerardo, to Pierrel S.p.A. Erythromycin aspartate salt. 3,764,595, Cl. 260-210.00g.
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Wallia, Perry S., 3,764,950.
Falkenstein, Albert J. Advertising display device. 3,763,584, Cl. 40-125.00m.
Fancher, Llewellyn W., to Stauffer Chemical Company. Phosphonamido thiazoles and their utility as insecticides. 3,764,674, Cl. 424-200.000.
Farabaugh, Aloysius W.: *See—*
Matesa, Joseph M.; and Farabaugh, Aloysius W., 3,764,285.
Farah Manufacturing Company, Inc.: *See—*
Champney, Rodney W.; Mc Keen, Leighton R.; and Breck, Louis William Jr., 3,763,802.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
John, Veit, 3,763,960.
Faroudja, Yves C. Color video recording and play back system. 3,764,739, Cl. 178-5.4cd.
Farr, Andrew F., to Farr Devices Inc. Instrument for measurement of hemoglobin content of whole blood. 3,764,267, Cl. 23-253.00r.
Farr Devices Inc.: *See—*
Farr, Andrew F., 3,764,267.
Fattore, Vittorio; Milanese, San Donato; Mazzei, Marcello; and Notari, Bruno, to Snam Progetti S.p.A. Process for disproportionating the olefins. 3,764,635, Cl. 260-685.00d.
Faust, Henry H.; and Faust, Peter J. Method and apparatus for establishing proper interocclusal distance for edentulous denture patients. 3,763,565, Cl. 32-19.000.
Faust, Peter J.: *See—*
Faust, Henry H.; and Faust, Peter J., 3,763,565.
Fauvet, Emile: *See—*
Pecheyran, Regis; and Fauvet, Emile, 3,764,827.
Favre, Lucien. Door spring. 3,763,519, Cl. 16-72.000.
Fechner, Gerd: *See—*
Brosch, Leo; Fechner, Gerd; and Reichert, Eduard, 3,764,834.
Feecon Corporation: *See—*
Gagliardo, John P., 3,764,075.
Feldman, Martin: *See—*
Dean, Robert Earl; Feldman, Martin; Griffin, Jack Page; and Warner, Arthur Woodward, Jr., 3,764,196.
Feldman, Sol, to Oxford Metal Products Co., Inc. Bed frame with headboard support brace. 3,763,508, Cl. 5-131.000.
Feltzin, Joseph: *See—*.
Burns, Joseph P.; Feltzin, Joseph; and Koehn, Erich, 3,764,577.
Feltzin, Joseph; and Kuehn, Erich, to ICI America Inc. Alkoxylated dihalobutenediol containing compositions. 3,764,546, Cl. 252-182.000.
Femmer, Klaus: *See—*
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, 3,764,599.

Fenne, Ivor, to C.A.V. Limited. Injection system for an internal combustion engine. 3,763,832, Cl. 123-25.00c.

Ferkl, Frantisek: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Chrtek, Milan; and Cap, Antonin, 3,763,641.

Fernseh G.m.b.H.: *See—*
Zettl, Herbert; and Siegel, Emil, 3,764,738.

Ferrari, Andres: *See—*
Kosowsky, David I.; Ferrari, Andres; and Hurtig, Carl R., 3,764,268.

Ferris, Donald L.; and Vacca, Luigi, to United Aircraft Corporation. Helicopter blade pitch lock. 3,764,229, Cl. 416-114.000.

Ferro Corporation: *See—*
Schwarzkopf, Henry; and Bouvier, John J., 3,763,601.

Ferschin, Peter: *See—*
Prostler, Wolfgang; Ferschin, Peter; and Lechner, Karl, 3,764,189.

Fiala, Ernst, to Klink, Wolf-Dieter. Injury prevention device for vehicles. 3,764,160, Cl. 280-150.0ab.

Fiala, Martin, KG: *See—*
Fiala, Winfried, 3,764,166.

Fiala, Winfried, to Fiala, Martin, KG. Apparatus for the coupling of a mobile roll trailer. 3,764,166, Cl. 280-425.00a.

Fichter, Manfred: *See—*
Spauszus, Siegfried; Fichter, Manfred; and Kelch, Heinz, 3,764,782.

Filipek, Stanley J.: *See—*
Csapo, Frank; Filipek, Stanley J.; Horton, Richard H.; and Kull, Richard A., 3,764,110.

Finck, Hans-Werner Friedrich Michael: *See—*
Wagner, John Ducan; and Finck, Hans-Werner Friedrich Michael, 3,764,376.

Finizio, Michael. Novel indolobenzazepine derivatives, useful as tranquilizers. 3,764,684, Cl. 424-263.000.

Finlay, Ian C.: *See—*
Lindsay, Roger; Thomas, Alun; Finlay, Ian C.; and Wilson, John L., 3,763,838.

Finlon, Francis P.: *See—*
Seeley, Ralph M., Jr.; and Finlon, Francis P., 3,764,964.

Firestone Tire & Rubber Company, The: *See—*
French, Robert Williams; and Gardner, James Dennis, 3,763,913.

Firmalino, Ismael W. In-cranked automatic pistol. 3,763,587, Cl. 42-1.00r.

Fischer, Werner Karl, to Swiss Aluminium Ltd. Apparatus for the production of green test specimens from artificial carbon. 3,764,242, Cl. 425-427.000.

Fischman, Martin; and Murphy, William D., to GTE Sylvania Incorporated. Single ramp film and TV receiver apparatus. 3,764,737, Cl. 178-7.200.

Fisher, Arthur I. Shaving system for extended blade life. 3,763,998, Cl. 206-47.00r.

Fisher, Earl L.; and Joyce, Ronald W., to Victor Comptometer Corporation. Pneumatic gun. 3,763,843, Cl. 124-13.00a.

Fisher, Scott Lewis; and Parker, Morris Jay, to Union Carbide Corporation. Self-lubricating solid compositions. 3,764,532, Cl. 252-12.000.

Fjellstrom, Bengt. Tube bending tool. 3,763,685, Cl. 72-217.000.

Flachglas AG: *See—*
Kramer, Heinrich; Butz, Josef; Muller, Richard; Thoma, Ludwig; Pollmann, Johann; Zielbauer, Hans; and Bernklau, Xaver, 3,764,431.

Flatley, James P.: *See—*
Manke, Herbert R.; and Flatley, James P., 3,764,798.

Fleck, David C., to American Hospital Supply Corporation. System for connecting wire shelf units end-to-end. 3,763,793, Cl. 108-64.000.

Fleck, David C., to American Hospital Supply Corporation. Clamp assembly for supporting a wire shelf. 3,763,794, Cl. 108-64.000.

Fleetwood Systems, Inc.: *See—*
Mojden, Wallace W., 3,764,024.

Fleming, William N. Animal feeder. 3,763,825, Cl. 119-51.120.

Fletcher, Charles W., Jr.: *See—*
Jennings, Thomas C.; and Fletcher, Charles W., Jr., 3,764,571.

Flintoft, William A. Tube formation and products formed thereby. 3,763,681, Cl. 72-57.000.

Florence, Alexander L.: *See—*
Zietzke, William A.; and Florence, Alexander L., 3,765,025.

FMC Corporation: *See—*
Betschart, Robert J.; and Brown, John S., 3,763,661.
Wilson, Donald C., 3,763,524.

Foley, Gary W.: *See—*
Guptill, Joel P.; and Foley, Gary W., 3,764,495.

Follmer, William C.: *See—*
Andreyko, Michael; and Follmer, William C., 3,764,182.

Fontaine, John G. Brake with vehicle speed and accelerator controls. 3,763,975, Cl. 192-3.0tr.

Fontaine, Louis: *See—*
Boschetti, Eugene; Molho, Darius; and Fontaine, Louis, 3,764,693.

Fontana, Marjorie A. Puppet-type figure toy. 3,763,591, Cl. 46-145.000.

Fontanel, Andre: *See—*
Grau, Gerard; and Fontanel, Andre, 3,764,967.

Food Technology Inc.: *See—*
Glade, Elmer F.; Anderson, Perry W.; and Lafisidis, Siergios, 3,764,344.

Forbes, Hampton E., Jr., to Westvaco Corporation. Display carton. 3,764,004, Cl. 206-45.140.

Forbes, Hampton L., Jr., to Westvaco Corporation. Pour spout carton having a hinged reclosable lid. 3,764,058, Cl. 229-17.00r.

Ford, Frederick M.; and Harvey, Robert L., to Oak Electro/Netics Corporation. Rotary solenoid ratchet switch. 3,763,713, Cl. 74-128.000.

Ford Motor Company: *See—*
Lukasik, John A.; and McCarthy, Patrick J., 3,764,158.

Fordy, Audrey Jean: *See—*
Olano, Francisco Omar; Fordy, James Keith; and Martel, Louis William, 3,764,257.

Fordy, James Keith: *See—*
Olano, Francisco Omar; Fordy, James Keith; and Martel, Louis William, 3,764,257.

Fordyce, Homer E., to Marley Company, The. Hyperbolic cross flow cooling tower with basins and fill integrated into shell. 3,764,121, Cl. 261-111.000.

Fork, Kurt: *See—*
Habock, Adolf; and Fork, Kurt, 3,764,815.

Forster, Werner: *See—*
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, 3,764,599.

Fort, Jack B., to Bendix Corporation, The. Filter contact for an electrical connector. 3,764,943, Cl. 333-79.000.

Forti, Emilio; Del Guercio, Carlo; and Gazzani, Giovanni. Contraceptive means. 3,763,861, Cl. 128-271.000.

Foster, Robert D. Fishing lure. 3,763,588, Cl. 43-4.000.

Foster-Miller Associates: *See—*
Guzdar, Adi R.; and Harvey, Andrew C., 3,763,847.

Fournell, Hans-Dieter; Adler, Karl-Heinz; and Locher, Johannes, to Bosch, Robert, G.m.b.H. Control arrangement with a pulse-length modulator for a piston. 3,763,744, Cl. 91-20.000.

Francis, Alphons. Tow-craft for swimmer. 3,763,817, Cl. 115-6.100.

Frank, Earl E.: *See—*
Wilson, Rosser L.; and Frank, Earl E., 3,763,967.

Frankenfeld, Klaus; and Gotzmann, Karl, to Chemische Fabrik Budenheim. Process for removal of cationic impurities from technical grade phosphoric acid. 3,764,657, Cl. 423-321.000.

Fraser, Douglas S.: *See—*
Bender, Charles E.; and Fraser, Douglas S., 3,764,836.

Free, William N.: *See—*
Bonneville, Gerald D.; Hetke, Adolf; and Free, William N., 3,763,549.

Freeborg, Robert M.: *See—*
Ehrman, Chester S.; Scheib, Louis; Worsley, Charles S.; Jones, Frank J.; and Freeborg, Robert M., 3,763,770.

Freeman, Craig; and Hetherington, Robert D., to Ransburg Electro-Coating Corporation. Fluid valve and mixing assembly. 3,763,876, Cl. 137-114.000.

Freeman, Wyndham J., to Freeman, Wyndham J., Ltd. Roofing system and method of application. 3,763,605, Cl. 52-58.000.

Freeman, Wyndham J., Ltd.: *See—*
Freeman, Wyndham J., 3,763,605.

Freiberg, Ashley H.: *See—*
Baker, Don R.; Menn, Julius J.; and Freiberg, Ashley H., 3,764,687.

Freiburger, Thomas William, to Deere & Company. Articulated vehicle transmission assembly. 3,763,949, Cl. 180-51.000.

Freiche, Jean: *See—*
Peyraud, Serge; and Freiche, Jean, 3,763,924.

French, Robert Williams; and Gardner, James Dennis, to Firestone Tire & Rubber Company, The. Tire having knit belt. 3,763,913, Cl. 152-361.00r.

Frenier, Wayne W.; and Settineri, William J., to Dow Chemical Company, The. Sulfonium compound as a corrosion inhibitor in aqueous acid. 3,764,543, Cl. 252-151.000.

Freyermuth, Harlan B.; and Randall, David I., to GAF Corporation. N-(Substituted sulfonamidomethyl)-2-pyrrolidinones. 3,764,611, Cl. 260-326.5sf.

Friedman, Arnold: *See—*
Vincent, Thomas C.; Friedman, Arnold; and Hickok, Robert L., 3,764,555.

Friedrich, Peter, to Vaillant, Joh., KG. Thermoelectric ignition safety device. 3,764,181, Cl. 431-81.000.

Fritzsche Dodge & Olcott, Inc.: *See—*
Kulka, Kurt, 3,764,712.

Frost, Donald J., to Modine Manufacturing Company. Heat exchanger. 3,763,930, Cl. 165-154.000.

Frost, Doris V.: *See—*
Klassen, Laverne M.; and Frost, Doris V., 3,764,106.

Froumajou, Armand, to Automobiles Peugeot and Regie Nationale des Usines Renault. Drive device for an ignition distributor for an internal combustion engine. 3,763,841, Cl. 123-146.50a.

Fruchard, Alain: *See—*
Bideau, Max A.; Chauveton, Charles E.; Fruchard, Alain; and Laurens, Marc, 3,764,212.

Fuchs, Hans: *See—*
Kunst, Detlef; and Fuchs, Hans, 3,763,987.

Fuchs, Johannes, Firma: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
Arai, Atsuaki; Yamada, Minoru; and Oishi, Yasushi, 3,764,337.
Fujimura, Ikuo, 3,764,839.
Honjo, Satoru, 3,764,312.
Nagae, Tadashi; and Tsuji, Nobuo, 3,764,327.

Obuchi, Kazuo, 3,764,207.
Shiba, Ketsuki; Takei, Harod; Sato, Akira; and Ikeda, Tadashi, 3,764,340.
Tamai, Yasuo; Sato, Masamichi; and Honjo, Satoru, 3,764,309.

Fujii, Masaki: *See—*
Miyoshi, Katsuyoshi; Iwasaki, Yoichi; Hotta, Yunichi; and Fujii, Masaki, 3,764,591.

Fujii, Motoharau: *See—*
Takahashi, Isao; Fujii, Motoharau; Kawakubo, Kazuo; Agriga, Masao; and Sugiura, Susumu, 3,764,208.

Fujimoto, Tadasu, to Yuasa Battery Company, Limited. Storage battery and a method of producing the same. 3,764,393, Cl. 136-134.00r.

Fujimura, Ikuo, to Fuji Photo Film Co., Ltd. Thermal recording tube. 3,764,839, Cl. 313-73.000.

Fukumaru, Toshitsugu: *See—*
Nakamura, Yasushi; Kimura, Michio; Suzuki, Yoshio; Hamma, Noritaka; Fukumaru, Toshitsugu; Aono, Shunji; and Fukushima, Hideaki, 3,764,704.

Fukushima, Hideaki: *See—*
Nakamura, Yasushi; Kimura, Michio; Suzuki, Yoshio; Hamma, Noritaka; Fukumaru, Toshitsugu; Aono, Shunji; and Fukushima, Hideaki, 3,764,704.

Fuller, David H.; and Rissolo, Herman A., to Branson Instruments Incorporated. Ultrasonic treatment apparatus. 3,764,116, Cl. 259-72.000.

Funakubo, Toshiei, to Kabushiki-Kaisha Eishin. Method of producing a band saw blade. 3,763,721, Cl. 76-112.000.

Furlong, Louis E.; Zimmerman, Abraham A.; and Shannon, Hugh F., to Esso Research and Engineering Company. Enhancing gasoline engine operation by improving air-fuel ratio distribution. 3,764,282, Cl. 44-69.000.

Furnier- und Sperrholzwerk T.F. Werz, Jr. K.G.: *See—*
Munk, Edmund E., 3,764,645.

Furst, Peter: *See—*
Bergstrom, Lars Jonas; Buchi, Nils Harje; Hultman, Erik Helmer; Josephson, Bertil August; Vinnars, Erik; Dahlinder, David Georg; and Furst, Peter, 3,764,703.

Furukawa Electric Company Limited, The: *See—*
Steinmetz, Ib; and Barmby, David S., 3,764,516.

Futcher, R. James: *See—*
Bartley, Thomas S.; Descary, John Gilbert; Futcher, R. James; and Krishnan, R. Gopala, 3,764,465.

Fuziyoshi, Kenzi: *See—*
Yamamoto, Hiroya; Tokita, Yuichiro; Fuziyoshi, Kenzi; Kasuga, Naoatu; Akamatsu, Akiyuki; and Sakurai, Hiroo, 3,764,487.

Gabor, Dennis, to International Business Machines Corporation. Holographic system for subject recognition permitting conversion of a pattern into a machine-readable form. 3,764,979, Cl. 340-146.300.

Gabsch, Gunther: *See—*
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, 3,764,599.

Gadd, John D.: *See—*
Kmieciak, Henry A.; and Gadd, John D., 3,764,279.

GAF Corporation: *See—*
Berni, Rene P., 3,764,384.
Freyermuth, Harlan B.; and Randall, David I., 3,764,611.
Schulte, Joseph B., 3,764,252.

Gagliardo, John P., to Feecon Corporation. Fire fighting turret. 3,764,075, Cl. 239-394.000.

Gaidos, Alonzo F.; and Gaidos, Angela G. Graph implement. 3,764,064, Cl. 235-70.00d.

Gaidos, Angela G.: *See—*
Gaidos, Alonzo F.; and Gaidos, Angela G., 3,764,064.

Galantay, Eugene E., to Sandoz-Wander, Inc. 17-Dihydrofuranyl-substituted steroids. 3,764,596, Cl. 260-239.550.

Galcik, Anthony J.; and Lange, Ronald E., to Honeywell Information Systems, Inc. Apparatus for sampling an asynchronous signal by a synchronous signal. 3,764,920, Cl. 328-110.000.

Galetto, William G.; and Pace, Carol A., to McCormick & Company, Inc. Synthetic onion oil composition. 3,764,709, Cl. 99-140.00r.

Gallagher, Peter Christopher John, to NL Industries, Inc. Method of making a ball joint linkage. 3,763,535, Cl. 29-149.50b.

Gallagher, Ruth E.: *See—*
Hwa, Jesse C. H.; and Gallagher, Ruth E., 3,764,638.

Gallagher, William, Jr., to Harris-Intertype Corporation. Corrugated paperboard slitter. 3,763,748, Cl. 93-36.00m.

Gallez, Pierre, to Glaverbel S.A. Apparatus for bending sheet material. 3,764,288, Cl. 65-273.000.

Gallucci, Francis, to United States Steel Corporation. Extractor for withdrawing or inserting rollclusters. 3,763,923, Cl. 164-282.000.

Galuska, Charles W., 25% to Edwards, Lois and Miller, Irene. Piling with extendable anchor legs. 3,763,655, Cl. 61-53.680.

Gambill, Ulysses T.; and Brock, Gregory C., Jr., to Owens-Corning Fiberglas Corporation. Molded product and apparatus for producing same. 3,764,243, Cl. 425-3.000.

Gamon-Calmet Industries, Inc.: *See—*
Evans, Ross Hugh; Seltzer, Daniel Arron; and Young, Robert Leonard, 3,764,918.

Gantt, Robert Dwight; and Rhee, Dong Woo, to GTE Sylvania Incorporated. Horizontal output circuitry for cathode ray tube system. 3,764,846, Cl. 315-27.0td.

Gardner, James Dennis: *See—*
French, Robert Williams; and Gardner, James Dennis, 3,763,913.

Gardner-Denver Company: *See—*
Shoop, John C.; and Anderson, Robert R., 3,763,882.

Garner, James W.; and Benedict, Bruce C., to Phillips Petroleum Company. Olefin isomerization process. 3,764,633, Cl. 260-683.200.

Garrett, Walter L.; and Ray, Thomas D., to Dow Chemical Company, The. Apparatus for molding hardenable materials. 3,764,247, Cl. 425-224.000.

Garzonio, Henry L. Yarn holder. 3,764,086, Cl. 242-130.000.

Gasner, Lawrence L.: *See—*
Stern, Arthur M.; and Gasner, Lawrence L., 3,764,014.

Gates Rubber Company, The: *See—*
Grossman, Phillip A., 3,764,380.
Kerst, Al F.; and Douros, John D., Jr., 3,764,676.
Kerst, Al F.; and Douros, John D., Jr., 3,764,677.
Stark, Robert E., 3,764,387.

Gaudebout, Claude; and Quercy, Jean-Fred, to Hoffmann-La Roche Inc. Device for measuring the partial pressure of a gas in a fluid. 3,763,850, Cl. 128-2.00e.

Gaumer, Lee S., Jr.; and Newton, Charles L., to Air Products and Chemicals, Inc. Combined cascade and multicomponent refrigeration system and method. 3,763,658, Cl. 62-40.000.

Gawlick, Heinz: *See—*
Bendler, Hellmut; Brede, Uwe; Gawlick, Heinz; and Roh, Peter, 3,763,782.

Gazzani, Giovanni: *See—*
Forti, Emilio; Del Guercio, Carlo; and Gazzani, Giovanni, 3,763,861.

GEC Elliot Automation SA: *See—*
Pecheyran, Regis; and Fauvet, Emile, 3,764,827.

Geiger, Lstyan; and Decker, Gerd, to Volkswagenwerk Aktiengesellschaft. Cylinder arrangement having a combustion and a precombustion chamber therein and a separate fuel supply or dosing means therefor. 3,763,834, Cl. 123-32.0sp.

Gelb, Allan S.: *See—*
Blythe, Edward A.; Gelb, Allan S.; and La Velle, Donald L., 3,764,306.

Gema AG Apparatebau: *See—*
Braun, Franz; and Ribnitz, Peter, 3,764,883.

General Datacomm Industries: *See—*
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General Diode Corporation: *See—*
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General Electric Company: *See—*
Antczak, Stanley M.; Getzendiner, Albert E.; and Riggert, Marvin C., 3,764,286.
Barb, Raymond P.; and Sutar, William, 3,764,307.
Bellows, Guy, 3,764,510.
Bergeron, John A.; and Slusarczuk, George M. J., 3,764,479.
Binzer, Thomas J., 3,764,793.
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Brown, Dale M., 3,764,411.
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Dornbusch, Paul E.; and Johnson, Thomas D., 3,763,678.
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Jablonski, Richard J., 3,764,573.
Lupinski, John H., 3,764,280.
MacDonald, John, 3,763,700.
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Orser, David A., 3,764,549.
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Smith, Russell M., 3,764,867.
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Tassie, Douglas Pray, 3,763,739.
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General Electric Company Limited, The: *See—*
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General Instrument Corporation: *See—*
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General Motors Coproration: *See—*
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General Motors Corporation: *See—*
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Bonneville, Gerald D.; Hetke, Adolf; and Free, William N., 3,763,549.
Harold, Marshall C., 3,763,670.
Lange, Walter H., 3,764,811.
Lehnert, Gunter, 3,764,953.
Malloy, John D., 3,763,719.
McDow, William R., 3,764,647.
McKinnon, Matthew C.; and MacIver, Bernard A., 3,764,507.
Miller, Fred H.; and Goyette, James W., 3,763,835.
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Mlynarczyh, Joseph E., 3,764,107.
Morgan, Robert E.; and Palma, James D., 3,764,234.
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Orlando, Vincent A., 3,763,837.
Stafford, John W.; and Yasin, Thomas P., 3,763,927.
Tipping, Roderick G., 3,763,718.
Trowbridge, Bruce D.; and Ness, Klaus J., 3,764,194.

General Switch Company: *See—*

Norden, Alexander R., 3,764,956.
General Tire & Rubber Company: *See—*
Duncan, Joe S.; and Elmer, Otto C., 3,764,365.
Geoffrey, David Charles, to Stanley Works, The. Garage door opener with instant reverse mechanism. 3,764,874, Cl. 318-266.000.
George, Percy F., to Dow Chemical Company, The. Self-destructing metal structures. 3,764,459, Cl. 161-225.000.
Gerber, Jerome J. Stacker vehicle. 3,763,771, Cl. 100-100.000.
Gerber, Robert, to Maschinenfabrik Schweiter AG. Thread laying mechanism for precision winding of pineapple bobbins. 3,764,090, Cl. 242-43.100.
Gerlach, Gottfried, to Bayer Aktiengesellschaft. Method and the apparatus for carrying out metallurgical and chemical processes. 3,764,296, Cl. 75-10.000.
Getzendiner, Albert E.: *See—*
Antczak, Stanley M.; Getzendiner, Albert E.; and Riggert, Marvin C., 3,764,286.
Giamei, Anthony: *See—*
Tschinkel, Johann G.; Giamei, Anthony; and Kearn, Bernard H., 3,763,926.
Gibson, Archibald M., Jr., to General Electric Company. Method of manufacturing type fingers. 3,763,544, Cl. 29-407.000.
Gibson, Daniel L.: *See—*
Coulter, Albert W., Jr.; Gibson, Daniel L.; and Nimerick, Kenneth H., 3,763,934.
Gibson, Fred D., Jr.; Rhees, Raymond C.; Gibson, James I.; and Halker, Bruce B., to Pacific Engineering & Production Company of Nevada. Method and apparatus for electrolytic treatment of sewage. 3,764,500, Cl. 204-152.000.
Gibson, James I.: *See—*
Gibson, Fred D., Jr.; Rhees, Raymond C.; Gibson, James I.; and Halker, Bruce B., 3,764,500.
Gilbert, Edward O.; and Oliver, Theodore A., to Reliance Electric Company. Amplifier offset compensation arrangement. 3,764,922, Cl. 328-162.000.
Gilbert, Robert W.: *See—*
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Gilbreth Company: *See—*
Spiegel, William; Spiegel, Jacob; and Miller, Albert (said Miller assor. to), 3,764,002.
Gill, John Allen: *See—*
Haner, Lambert; and Gill, John Allen, 3,764,784.
Gilley, Charles H.: *See—*
Abbott, Georg F.; Gilley, Charles H.; and Skatrud, Ralph O., 3,764,742.
Gilliam, Clarence W.; and Hall, Thomas N., to United States of America, Navy. Chemical lighting device. 3,764,796, Cl. 240-2.250.
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Grau, Gerard; and Fontanel, Andre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Method for the composition of recordings and device for carrying out the same. 3,764,967, Cl. 340-15.5ss.
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Gray, Colin; and Burge, Anthony Robert, to Crosfield Business Machines Limited. Sheet feeding apparatus. 3,764,133, Cl. 271-103.000.
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Griffith, John Dalton, to Bonas Machine Company, Limited. Chain type loom shedding mechanism. 3,763,897, Cl. 139-78.000.

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Grillot, Homer N., to International Harvester Company. Sickle bar mower having a swash plate drive. 3,763,639, Cl. 56-296.000.

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Gruner, Ronald H., to Data General Corporation. Switch monitoring circuitry. 3,765,015, Cl. 340-365.00e.

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Gurien, Harvey; and Rachlin, Albert Israel, to Hoffmann-La Roche Inc. Process for the preparation of pyrocatechols. 3,764,629, Cl. 260-621.00r.

Guth, Durward O. Liquid droplet spraying method and composition. 3,764,293, Cl. 71-117.000.

Guthrie, Tom L., to Lectrasearch Corporation. Apparatus for bringing earthworms to the surface of the ground. 3,763,593, Cl. 47-1.300.

Gutnajer, Ludwik, to Budd Company, The. Short run production tool. 3,763,542, Cl. 29-400.000.

Guzdar, Adi R.; and Harvey, Andrew C., to Foster-Miller Associates. Radiant heater. 3,763,847, Cl. 126-92.00b.

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Habersberger, Francis, to Marine Colloids, Inc. Algin salt-mannogalactan gum containing aqueous cosmetic lotion. 3,764,707, Cl. 424-361.000.

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Harvey, Donald M., to Eastman Kodak Company. Film pack with resilient waste handling means. 3,763,754, Cl. 95-19.000.

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Hawes, Edward M. Resilient wheel. 3,763,910, Cl. 152-14.000.

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Hayden, Rodney; and Guarasci, Mario, to TRW Inc. Vehicle speed responsive control and signal device. 3,764,975, Cl. 340-62.000.

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Heard, James L.; Opittek, Eugene W.; and Meyers, Harold M; deceased (by Meyers, Mary Elizabeth; executrix), said Heard and said Opittek assor. to Hughes Aircraft Company. Digital scan converter. 3,765,018, Cl. 343-5.0sc.

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Heckles, John S.; and Quinn, Edwin J., to Armstrong Cork Company. Polyurethane foams from phosphorous containing sugar polyols. 3,764,570, Cl. 260-2.5ar.

Heffner, Robert E., to Aluminum Company of America. Easy opening container wall. 3,764,038, Cl. 220-48.000.

Heimberger, Helmut, to Opti-Holding AG. Method of making waterproof slide-fastener stringer. 3,764,437, Cl. 156-306.000.

Heimbrock, Henry H., to Van Products, Incorporated. Cluster assembly and connector clip therefor. 3,764,960, Cl. 339-217.00s.

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Heller, Lawrence Griffith, to International Business Machines Corporation. Stored charge detection by charge transfer. 3,764,906, Cl. 324-111.000.

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Herron, Christopher C., to International Business Machines Corporation. Method fo manufacturing a tubular printed circuit armature. 3,763,551, Cl. 29-598.000.

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Hewlett-Packard Company: *See—*
Rodine, Thomas G., 3,764,902.
Terry, Frank D.; House, Charles H.; and West, Virgil C., 3,764,783.

Heyne, Karl-August: *See—*
Bottcher, Lutz; and Heyne, Karl-August, 3,764,745.

Hickok, Robert L.: *See—*
Vincent, Thomas C.; Friedman, Arnold; and Hickok, Robert L., 3,764,555.

Hicks, John M.; and Paice, Derek A., to Westinghouse Electric Corporation. Current limiting device. 3,764,851, Cl. 317-11.00c.

Hida, Hiromu: *See—*
Suda, Hideaki; Kanda, Tatsuo; Murata, Yoshiro; Hida, Hiromu; and Kubo, Toshio, 3,764,664.

Hierholzer, Frank J.; and Ancona, John A., to Emerson Electric Co. Method of making coherent shape of silicon carbide. 3,764,776, Cl. 219-121.0lm.

Hiestand, James C.; and Thies, Richard O., to Continental Drilling Company. Wall saw assembly. 3,763,845, Cl. 125-14.000.

Higuchi, Takeru; and Hussain, Anwar, to Interx Corporation. Compositions of salts of salicylamide. 3,764,668, Cl. 424-44.000.

Hildebrand, Dietrich; and Kirschnek, Helmut, to Bayer Aktiengesellschaft. Process for the dyeing and printing of textile materials. 3,764,262, Cl. 8-84.000.

Hildebrand, Hans Gunter, to Aesculap Werke Aktiengesellschaft vormals Jetter & Scheerer. Forceps, pliers or the like and method of producing the same. 3,763,726, Cl. 81-416.000.

Hilgenbrink, John T., to Continental Can Company, Inc. Method of forming necked-in bodies. 3,763,807, Cl. 113-120.00r.

Hilgert, William: *See—*
MacVey, Gary Leo; and Hilgert, William, 3,763,887.

Hill, Charles C.: *See—*
Anderson, George Fred; and Hill, Charles C., 3,763,761.

Hill, Warner Mike: *See—*
Jedlicka, Glen J.; Hill, Warner Mike; and Heck, Joseph G., 3,764,480.

Hill, William E.; and Beason, Lew R., to United States of America, Army, mesne. Composite propellant including gem-NFα -alkyl carborane. 3,764,417, Cl. 149-19.200.

Hill, William Frank, to Lucas, Joseph, (Industries) Limited. Battery charging systems for road vehicles. 3,764,879, Cl. 320-48.000.

Hillegass, Donald V.: *See—*

Lovell, John A.; and Hillegass, Donald V., 3,764,455.

Hilti Aktiengesellschaft: *See—*
Tauern, Dankmar, 3,764,778.

Himmelmann, Wolfgang; Von Konig, Anita; Moll, Franz; Rocker, Dietrich; and Saleck, Wilhelm, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsions stabilized with N-(1,3,4-thiodiazol-2-yl)-dithiocarbamic acid esters. 3,764,339, Cl. 96-109.000.

Hind, John Richard, to United Kingdom Atomic Energy Authority. Thermal insulation for the surface of a container for a liquid metal cooled nuclear reactor. 3,764,468, Cl. 176-40.000.

Hini, Paul; and Albrecht, Adolf, to Siemens Aktiengesellschaft. Galvanomagnetic resistance device. 3,764,952, Cl. 338-32.00r.

Hinley, John James; and Goldsbrough, Keith, to British Titan Limited. Treatment of pigments. 3,764,362, Cl. 106-300.000.

Hirano, Hiroshi; Yoshida, Kiyoshi; and Kusuoka, Nobutaro, to Kobe Steel Ltd. Method for producing a mono-directional silicon steel sheet. 3,764,407, Cl. 148-112.000.

Hirano, Takeshi, to Alps Motorola, Inc. Cartridge eject actuating circuitry for multi-track tape cartridge player. 3,764,147, Cl. 274-4.00b.

Hirose, Takeshi: *See—*
Inoue, Isao; Sekine, Susumu; Hirose, Takeshi; Matsumoto, Kenichi; and Miyasawa, Nobuo, 3,764,047.

Hirschman, Howard I., to Pitney-Bowes, Inc. Operator serviceable corona charging apparatus. 3,764,804, Cl. 250-324.000.

Histed, John A.; Lawford, William H.; McLeod, Murray J.; Wendeborn, Robert G.; and Catford, Dennis R., to Canadian International Paper Company. Method and apparatus for chromatic control of pulping process. 3,764,463, Cl. 162-49.000.

Hitachi, Ltd.: *See—*
Aizu, Keiichiro; Kumada, Akio; and Koga, Masashi, 3,764,197.
Hachiya, Takeo; Naganuma, Susumu; and Umino, Tomotaka, 3,764,231.
Mannaka, Toshio; Kitanosono, Hidehiro; Matsuka, Shigemichi; and Shingai, Sadanori, 3,763,677.
Mukoh, Akio; Mori, Yasuki; Sakashita, Kiyoshi; Nozaki, Sukekatsu; and Hagitani, Akira, 3,764,590.
Muta, Akinori; and Tsukuda, Yasuo, 3,764,643.
Nakajima, Hisao; Suzuki, Takashi; and Hokawa, Takuya, 3,764,747.
Nakajima, Yasuo, 3,764,803.
Nara, Akinao, 3,764,789.
Nomura, Masayoshi; Nagata, Minoru; and Saida, Hiroji, 3,764,409.
Onishi, Yoshihiro, 3,764,988.
Sakabe, Akira; Sakagami, Mitsuhiro; and Arai, Kunio, 3,764,777.
Takasugi, Kazuo, 3,764,981.
Takasuna, Tsuneyoshi; Sugawara, Hiroyuki; and Kurosawa, Yukio, 3,764,764.

Hobby, Laurence M., to Texaco Inc. Method and apparatus for determining a fluid contaminant. 3,763,706, Cl. 73-452.000.

Hockley, Audrey Hilda: *See—*
Hockley, Horace Reginald; and Hockley, Audrey Hilda, 3,763,907.

Hockley, Horace Reginald; and Hockley, Audrey Hilda. Unit for protecting a supporting surface from soiling by a human or an animal. 3,763,907, Cl. 150-1.000.

Hodate, Tomoshi, 1/2 to Sugite Sangyo Kabushiki Kaisha and 50% to Sugiue Kenk Kabushiki Kaisha. Ship drawing and staying device. 3,763,815, Cl. 114-230.000.

Hoekstra, Gerald B.: *See—*
Jacobs, Robert B.; and Hoekstra, Gerald B., 3,764,565.

Hoerner-Waldorf Corporation: *See—*
Krzyzanowski, Robert A., 3,763,522.

Hoff, Hans: *See—*
Baumann, Karl-Friedrich; Hoff, Hans; and Braumuller, Kurt, 3,763,763.

Hoff, Johan E.: *See—*
Baker, Harvey O.; and Hoff, Johan E., 3,763,767.

Hoffman-La Roche Inc.: *See—*
Haff, Richard Walter; and Hatke, Fred Louis, 3,763,851.
Hatke, Fred Louis, 3,763,852.

Hoffmann-La Roche Inc.: *See—*
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,764,602.
Gaudebout, Claude; and Quercy, Jean-Fred, 3,763,850.
Gurien, Harvey; and Rachlin, Albert Israel, 3,764,629.
Lowenstein, John M., 3,764,692.

Hofler, Willy. Method of making or testing involute helical gears and machine therefor. 3,763,598, Cl. 51-52.00r.

Hofler, Willy. Apparatus for regulation of chip removal in teeth-generating grinding of gear wheels. 3,763,599, Cl. 51-95.0gh.

Hofmeister, Robert W.; and Mickelson, Thorwald J. Trailer lock apparatus. 3,763,675, Cl. 70-232.000.

Hoganas AB: *See—*
Sundin, Per Fredrik, 3,763,919.

Hoganas AG: *See—*
Lindskog, Per Folke; Bengtsson, Anders Eric; Grek, Sven-Erik; and Lagerholm, Lennart Yngve, 3,764,295.

Hoganas Aktiebolag: *See—*
Blom, Ingvar Gustav Axel; and Ivarsson, Paul Lennart, 3,763,533.

Hohchreiter, Josef, to Messerschmitt-Bolkow-Blohm GmbH. Method and means for controlling the distance between two moving conveyances. 3,764,985, Cl. 340-171.00r.

Hoille, Michel Ernest Antoine: *See—*
Kienzle, Jean Andre Paul; Hoille, Michel Ernest Antoine; and Cabut, Louis Antoine, 3,764,361.

Hokawa, Takuya: *See—*
Nakajima, Hisao; Suzuki, Takashi; and Hokawa, Takuya, 3,764,747.

Hoke, William A. Spring loader eccentric turning tool. 3,763,727, Cl. 82-36.00r.

Hollis, Russell E. Metal composites including layer of unwoven wires. 3,764,277, Cl. 29-191.600.

Hollis, Russell E., Jr. Jack. 3,764,109, Cl. 254-86.00r.

Holtz, Gilbert J. Inflatable canoe and outrigger. 3,763,813, Cl. 114-123.000.

Holzman, Lawrence B.: *See—*
Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., 3,764,263.

Homa, Stephen W.: *See—*
Godfrey, Howard J.; Homa, Stephen W.; and Stott, Ronald J., 3,763,680.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Imai, Yasuhiro, 3,764,120.

Honeywell Inc.: *See—*
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Honeywell Information Systems, Inc.: *See—*
Galcik, Anthony J.; and Lange, Ronald E., 3,764,920.
Nowell, John R., 3,764,889.
Regitz, William M., 3,765,000.
Weeden, Otto P., Jr., 3,764,977.

Hong, Se J.; Jones, Darryl S.; and Ostapko, Daniel L., to International Business Machines Corporation. Error checking circuit. 3,764,788, Cl. 235-153.00a.

Honisch, Egon: *See—*
Solms-Baruth, Hubertus Graf Zu; and Honisch, Egon, 3,763,900.

Honjo, Satoru: *See—*
Tamai, Yasuo; Sato, Masamichi; and Honjo, Satoru, 3,764,309.

Honjo, Satoru, to Fuji Photo Film Co., Ltd. Electrophotographic process. 3,764,312, Cl. 96-1.200.

Hooker Chemical Corporation: *See—*
Carlson, Ronald H., 3,764,656.
Miller, George T., 3,764,294.
Tarjanyi, Michael; and Strier, Murray P., 3,764,497.
Tarjanyi, Michael; and Strier, Murray P., 3,764,498.

Hope, Paul; Martin, Richard John; and Stark, Bernard Peter, to Ciba-Geigy AG. Curable compositions. 3,764,584, Cl. 260-78.4ep.

Hoppesch, Joseph P.: *See—*
Collier, Donald W.; Hoppesch, Joseph P.; and Mamo, Anthony C., 3,764,270.

Horenkamp, John Joseph; Meise, Henry August, Jr.; and Taylor, George William, to Bell Telephone Laboratories, Incorporated. Switching system equipped for one-way line hunting. 3,764,750, Cl. 179-18.0ha.

Hori, Takashi; and Kodama, Hiroshi, to Toray Industries, Inc. Photopolymerizable polyamide compositions and process for the preparation thereof. 3,764,501, Cl. 207-159.150.

Horizons Incorporated: *See—*
Wainer, Eugene; and Betts, James F., 3,764,334.

Horn, Edward A.; Miness, Irwin; and Rosten, Henry R., to Chemical Detergents Co., Inc. Method and apparatus for removing entrained matter from centrifugal filter media. 3,763,631, Cl. 55-96.000.

Horn, Erhard; Konig, Gert; and Koenitzer, Joachim, to Martin & Pagenstecher GmbH. Ladle for steel or pig iron and mass for the lining thereof. 3,764,125, Cl. 266-39.000.

Horn, Werner G.; and Neumann, Robert M., to Olin Corporation. Multi-phase strip from particle and powder mixture. 3,764,308, Cl. 75-211.000.

Horne, Frederick F.; and Vanderlans, Gerald G., to Airrigation Engineering Company, Inc. Plugging a home service sewer line. 3,763,896, Cl. 138-89.000.

Horton, Richard H.: *See—*
Csapo, Frank; Filipek, Stanley J.; Horton, Richard H.; and Kull, Richard A., 3,764,110.

Hotta, Yunichi: *See—*
Miyoshi, Katsuyoshi; Iwasaki, Yoichi; Hotta, Yunichi; and Fujii, Masaki, 3,764,591.

House, Charles H.: *See—*
Terry, Frank D.; House, Charles H.; and West, Virgil C., 3,764,783.

Houver, Troy E.; and Wright, Arthur J., to National Cash Register Company, The. Pressure sensitive recording unit. 3,764,369, Cl. 117-36.200.

Hover, Paul B., to Tecumseh Products Company. Refrigeration process, apparatus and method. 3,763,659, Cl. 62-115.000.

Howie, David Malcolm; and McKenzie, Roy Victor William, to Pyrotenax of Canada Limited. End seals for electric cables and method of making same. 3,764,728, Cl. 174-76.000.

Hrusovsky, Louis J., to North American Rockwell Corporation. Metallic articles and the manufacture thereof. 3,764,401, Cl. 148-11.50r.

Hsia, Chien; and Przybyla, Franciszek. Method of producing a zinc alloy powder and an electrode therefrom. 3,764,389, Cl. 136-31.000.

Hsieh, Henry L.; Mueller, Francis X., Jr.; and Busler, William R., to Phillips Petroleum Company. Block copolymers of conjugated dienes and lactones. 3,764,639, Cl. 260-880.00b.

Huard, George Phillip, to Control Data Corporation. Sample and hold circuit. 3,764,921, Cl. 328-151.000.

Hudis, Michael I., to Rexnord Inc. Stringline holder. 3,763,567, Cl. 33-1.0le.

Huf, Franz, to Dornier System G.m.b.H. Rotary piston engine with trochoidal construction. 3,764,239, Cl. 418-61.000.

Hughes Aircraft Company: *See—*
Hasslinger, Robert L.; Newton, William J.; Toscano, Esteban J.; and Castro, Rodolfo, 3,764,775.
Heard, James L.; Opittek, Eugene W.; and Meyers, Harold M (said Heard and said Opittek assor. to), 3,765,018.
O'Meara, Thomas R., 3,764,213.
Wheeler, Bryce A., 3,764,192.

Hughes, Frank M.: *See—*
McMaster, Leonard R.; Peterson, Sheldon T.; and Hughes, Frank M., 3,763,691.

Hulbert, Allison G., to Moore Business Forms, Inc. Film processing envelope. 3,764,061, Cl. 229-70.000.

Hultman, Bengt; and Norgren, Erik Borje William, to Mo och Domsjo Aktiebolag. Process for the recovery of mercury from mercury-containing liquids. 3,764,496, Cl. 204-99.000.

Hultman, Erik Helmer: *See—*
Bergstrom, Lars Jonas; Buchi, Nils Harje; Hultman, Erik Helmer; Josephson, Bertil August; Vinnars, Erik; Dahlinder, David Georg; and Furst, Peter, 3,764,703.

Hunt, Mack W.; and Sias, Roy C., to Continental Oil Company. Oil soluble dialkaryl sulfonate compositions. 3,764,533, Cl. 252-33.000.

Hunt, Rowland Delville, to Vosper Thornycroft, Limited. Gas-cushion vehicle. 3,763,957, Cl. 180-119.000.

Hunter, Don L.: *See—*
Strong, Philip L.; Hunter, Don L.; and Le Febre, Cecil W., 3,764,624.
Woods, William G.; Hunter, Don L.; Stone, James D.; and Le Febre, Cecil W., 3,764,625.

Hunter, Don L.; Woods, William G.; Stone, James D.; and Le Febre, Cecil W. Herbicidal dinitro-1,3-phenylenediamine compounds. 3,764,623, Cl. 260-573.000.

Hunzinger, Jean-Jacques, to U.S. Philips Corporation. Objective system consisting of a diaphragm and a single lens. 3,764,198, Cl. 350-190.000.

Hurley, Donald L.; and Talmage, Charles R. Apparatus for compacting granular material. 3,764,244, Cl. 425-78.000.

Hurtig, Carl R.: *See—*
Kosowsky, David I.; Ferrari, Andres; and Hurtig, Carl R., 3,764,268.

Husky Manufacturing & Tool Works, Limited: *See—*
Van Melle, Hugh; and Rees, Herbert, 3,764,025.

Husqvarna Vapenfabriks Aktiebolag: *See—*
Blomberg, Folke Ivar, 3,763,716.

Hussain, Anwar: *See—*
Higuchi, Takeru; and Hussain, Anwar, 3,764,668.

Hussey, Charles E.; and De Corso, Serafino M., to Westinghouse Electric Corporation. Gas turbine temperature profiling structure. 3,763,650, Cl. 60-39.74r.

Hustler Industries, Inc.: *See—*
Mc Burnett, Arthur D., 3,764,383.

Huxsoll, Charles C.; and Ponting, James D., to United States of America, Agriculture. Preservation of peaches for subsequent processing. 3,764,348, Cl. 426-310.000.

Hwa, Jesse C. H.; and Gallagher, Ruth E., to Stauffer Chemical Company. Processing aids for polyvinyl chloride and methods for their preparation. 3,764,638, Cl. 260-876.00r.

Hyde, Mide Arthur; Chalmers, Peter Denton; and Mackie, Walter Blair, to Dow Chemical Company, The. Roof construction. 3,763,614, Cl. 52-309.000.

Hydril Company: *See—*
Mutt, James D., 3,763,940.

Hydrill Company, mesne: *See—*
Mott, James D., 3,763,933.

Ichihara, Tatsuro: *See—*
Muramatu, Akira; and Ichihara, Tatsuro, 3,764,973.

Ichikawa, Hirohiko: *See—*
Nishino, Hiroshi; Kubo, Hakaru; and Ichikawa, Hirohiko, 3,764,561.

ICI America Inc.: *See—*
Burns, Joseph P.; Feltzin, Joseph; and Koehn, Erich, 3,764,577.
Feltzin, Joseph; and Kuehn, Erich, 3,764,546.
Restaino, Alfred J., 3,764,502.

Ideal Industries, Inc.: *See—*
Oprins, Johannes A. E., 3,763,723.

Ideal Security Hardware Corporation: *See—*
Colombo, Gregory R.; and Waldo, Russell W., 3,763,673.

Ideal Toy Corporation: *See—*
Reinertsen, Tormod K., 3,764,134.

Igarashi, Yoshiya: *See—*
Beck, Lloyd; Igarashi, Yoshiya; Thompson, Benjamin L.; and Thurman, Robert V., 3,764,963.

Iha, Kiyoshi, to Bell & Howell Company. Indexing mechanism. 3,764,202, Cl. 352-123.000.

Ihara Chemical Industry Co., Ltd.: *See—*
Kanazawa, Teiichi; Ogawa, Shigeru; Matsui, Sadayoshi; and Shimizu, Masamichi, 3,764,661.

Iida, Yoshio: *See—*
Matsuoka, Michio; Masuyama, Takeshi; and Iida, Yoshio, 3,764,566.

Ikeda, Tadashi: *See—*
Shiba, Ketsuki; Takei, Harod; Sato, Akira; and Ikeda, Tadashi, 3,764,340.

Imai, Yasuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Air bleed adjusting device for the carburetor of an internal combustion engine. 3,764,120, Cl. 261-29.00b.

IMI Developments Limited: *See—*
Parsons, Bernard Arthur, 3,763,504.

Imperial Chemical Industries Limited: *See—*
Newton, Alan Branford; Rose, John Brewster; and Leslie, Victor Jeffrey, 3,764,583.
Ricketts, Ronald Edmund, 3,763,521.

Imperial Metal Industries (Kynoch) Limited: *See—*
Barber, Anthony Clifford; and McDougall, Ian Leitch, 3,763,553.

Imperial Smelting Corporation, (N.S.C.) Limited: *See—*
Morgan, Stephen William Kenneth, 3,764,301.

Imperiale, Nino: *See—*
Giraudi, Giorgio Aldo Maria; and Imperiale, Nino, 3,763,620.

Imris, Pavel, to Resource Control, Inc. Discharge electrode for an electrostatic precipitator. 3,763,632, Cl. 55-146.000.

Inaga, Katsu, to Sony Corporation. Magnetic recording and/or reproducing apparatus with tape guide and pick-up system for use with a tape cartridge. 3,764,757, Cl. 179-100.2za.

Inagami, Kaoru; Mitsui, Isamu; and Kando, Hiroaki, to Calpis Shokuhin Kogyo Kabushiki Kaisha. Drink composed of fermented or acidified milk and citrus fruit juice. 3,764,710, Cl. 426-185.000.

Industrie Pirelli S.p.A.: *See—*
Bergomi, Luciano, 3,763,912.

Inmont Corporation: *See—*
Civardi, Frank Peter; and Kuenstler, Hans Georg, 3,764,363.

Inoue, Isao; Sekine, Susumu; Hirose, Takeshi; Matsumoto, Kenichi; and Miyasawa, Nobuo, to Nippon Kokan Kabushiki Kaisha, Tokyo Yogyo Kabushiki Kaisha and Kokankikai Kogyo Kabushiki Kaisha. Rotary nozzle for ladle. 3,764,047, Cl. 222-548.000.

Inoue, Minoru: *See—*
Yoshida, Minoru; Inoue, Minoru; and Koike, Suetoshi, 3,764,482.

Inoue, Yasukuzo: *See—*
Kakizaki, Katsunobu; Kurakami, Osamu; and Inoue, Yasukuzo, 3,764,413.

Institut Francais du Petrole, des Carburants et Lubrifiants: *See—*
Blejean, Claude; Bourdoncle, Bernard; and Malmaison, Rueil, 3,764,534.
Grau, Gerard; and Fontanel, Andre, 3,764,967.

Instrument Systems Corporation: *See—*
Schachter, Jacob; Reich, Zygmund; and Greenberg, David R., 3,763,676.

Intercole Automation, Inc.: *See—*
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Interlake, Inc.: *See—*
Olah, Emmerich I., 3,764,026.

International Business Machines Corporation: *See—*
Abbott, Georg F.; Gilley, Charles H.; and Skatrud, Ralph O., 3,764,742.
Ashby, David Franklin, 3,763,729.
Ayling, John; and Moore, Richard D., 3,764,833.
Beausoleil, William Francis, 3,765,001.
Blum, Joseph M.; and Shih, Kwang K. S., 3,764,414.
Bohlen, Harald; Engelke, Helmut; and Landrock, Jurgen, 3,764,898.
Brooks, Everett G.; and Lewis, David O., 3,764,994.
Buckingham, Robert L.; Herd, Harold H.; and Sun, Theresa I., 3,764,115.
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Gabor, Dennis, 3,764,979.
Heller, Lawrence Griffith, 3,764,906.
Herron, Christopher C., 3,763,551.
Hong, Se J.; Jones, Darryl S.; and Ostapko, Daniel L., 3,764,788.
Jacquart, Christian Augustin, 3,764,792.
Karnaugh, Maurice, 3,764,914.
Lettieri, John, 3,764,993.
Nick, Howard H., 3,764,941.
Ross, Robert Elmer, 3,764,996.
Schedewie, Franz Joseph, 3,764,218.
Zappe, Hans H., 3,764,863.
Zappe, Hans H., 3,764,905.
Zarowin, Charles Bezalel, 3,764,886.

International Flavors & Fragrances Inc.: *See—*
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Mookherjee, Braja O.; and Blets, Moos G. J., 3,764,349.

International Harvester Company: *See—*
Grillot, Homer N., 3,763,639.
Mc Callum, Donald A., 3,764,077.
Prokop, Josef F.; and Eickmeyer, Irvin A., 3,763,976.

International Nickel Company, Inc., The: *See—*
Olano, Francisco Omar; Fordy, James Keith; and Martel, Louis William (said Olano and said Martel assors. to), 3,764,257.

International Paper Company: *See—*
Bartley, Thomas S.; Descary, John Gilbert; Futcher, R. James; and Krishnan, R. Gopala, 3,764,465.

International Travel & Transportation Company, Limited: *See—*

Dover, Jay L., 3,764,017.
Interx Corporation: *See—*
Higuchi, Takeru; and Hussain, Anwar, 3,764,668.
Iorizzo, Robert P.; and Williams, Vernon L. Laser pump enclosure. 3,764,935, Cl. 331-94.500.
Irvine, Norman William: *See—*
Perry, Ian James; Watson, Bruce Dunstan; Lagerche, John Geoffrey; Denman, George Alan; Irvine, Norman William; Goding, Thomas Joseph; and Moffett, Graham Douglas, 3,763,915.
Ishida, Nobuhisa; and Tsubouchi, Toshiyuki, to Sailor Pen Co., Ltd., The. Vertical type take-out device for injection molding machines. 3,764,022, Cl. 214-1.0bd.
Ishikura, Masao: *See—*
Yamashita, Yasushi; Kumura, Kenji; and Ishikura, Masao, 3,764,755.
Israel, State of, Ministry of Agriculture, The: *See—*
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Itaya, Kyuhei: *See—*
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Itek Corporation: *See—*
Keller, Juergen H. H.; and Sprague, Robert H., 3,764,319.
Simons, Brent S.; and Nurse, Howard L., 3,764,999.
Sprague, Robert H., 3,764,320.
Ithaca Textiles, Inc.: *See—*
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Ito, Yozo: *See—*
Oshima, Keiji; Ito, Yozo; and Suzuki, Setsuo, 3,764,428.
ITT Industries, Inc.: *See—*
Sterling, Henly Frank, 3,764,272.
Ivanier, Isin. Wire products. 3,764,278, Cl. 29-193.000.
Ivarsson, Paul Lennart: *See—*
Blom, Ingvar Gustav Axel; and Ivarsson, Paul Lennart, 3,763,533.
Iversen, Ralph T., to Viking Industries, Inc. Electrical connector. 3,764,957, Cl. 339-92.00m.
Iwamoto, Akira: *See—*
Takenaka, Shigeo; and Iwamoto, Akira, 3,764,632.
Iwasaki, Yoichi: *See—*
Miyoshi, Katsuyoshi; Iwasaki, Yoichi; Hotta, Yunichi; and Fujii, Masaki, 3,764,591.
Iwatsu Electric Co., Ltd.: *See—*
Kiyasu, Zenichi; and Nakamura, Tsutomu, 3,764,812.
Yamanaka, Ritsuzo, 3,764,787.
Izawa, Nobuharu; Toyoshima, Hiroshi; and Kikuyama, Munetsugu, to Teijin Limited. Methods and apparatus for transferring tows. 3,763,520, Cl. 19-65.00t.
Jablonski, Richard J., to General Electric Company. Preparation of prepregs. 3,764,573, Cl. 260-30.40r.
Jack, Alexander Gray: *See—*
Van Eujl, Antonie Peter Lambertus; Jack, Alexander Gray; and Nienhuis, Harry, 3,764,843.
Jackson, Bryon, Inc.: *See—*
Shirvany, John Anoush, 3,763,653.
Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Company. Flame retardant textiles. 3,763,644, Cl. 57-140.0by.
Jacobs, John H.; and Corrigan, Richard A., to Bell & Howell Company. Lead iodine film. 3,764,368, Cl. 117-34.000.
Jacobs, Robert B.; and Hoekstra, Gerald B., to Standard Oil Company. Catalyst for hydrocracking a resid hydrocarbon. 3,764,565, Cl. 252-470.000.
Jacobsz, Roelof F. Bridge operated late-phase firing circuit means for fuel burners. 3,764,821, Cl. 307-139.000.
Jacobus, Dan, to Buckbee-Mears Company. Method of making and using electroplating matrix. 3,764,485, Cl. 204-11.000.
Jacquart, Christian Augustin, to International Business Machines Corporation. Method and apparatus for adding two delta coded signals. 3,764,792, Cl. 235-168.000.
Jaffa, David, to Precision Screen Machines, Inc. Vacuum pallet type screen printing machine with registration means. 3,763,776, Cl. 101-126.000.
Jaffe, David M. Method of and apparatus for setting blind fasteners. 3,763,541, Cl. 29-212.00d.
Jambor, Dorothy E. Automatic gravity sawing. 3,763,733, Cl. 83-766.000.
James, Alec Patrick, to National Research Development Corporation. Ticket issuing and collection systems. 3,763,983, Cl. 194-10.000.
James, Claire Llewellyn: *See—*
Morse, John Edwin; and James, Claire Llewellyn, 3,764,211.
James, Donald R. Shower head and liquid agent dispensing attachment. 3,764,074, Cl. 239-318.000.
Jankowski, Alfred S., to Fairchild Camera and Instrument Corporation. Lead frame for light-emitting diodes. 3,764,862, Cl. 317-234.00r.
Janning, John L., to National Cash Register Company, The. Method of forming cavities in a plasma display panel. 3,764,429, Cl. 156-89.000.
Janssen, Paul Adriaan Jan: *See—*
Akkerman, Antony M.; and Janssen, Paul Adriaan Jan, 3,764,606.
Japan Maize Products Co., Ltd.: *See—*
Miyamoto, Sho; Kurihara, Sachihiko; and Nishikawa, Shinichi, 3,764,460.
Japanese National Railways: *See—*
Nakajima, Hisao; Suzuki, Takashi; and Hokawa, Takuya, 3,764,747.
Jaquay, Louis H.: *See—*
Middough, William V.; and Jaquay, Louis H., 3,764,718.
Jaros, Frantisek: *See—*
Doudlebsky, Ctibor; Jaros, Frantisek; Ferkl, Frantisek; Chrtek, Milan; and Cap, Antonin, 3,763,641.
Jatcko, Joseph M. Swing-away automation workpiece gripper. 3,764,023, Cl. 214-1.0bc.
Jaworek, Dieter, to Boehringer Mannheim Gesellschaft mit beschrankter Haftung. Combination column. 3,763,879, Cl. 137-268.000.
Jaworski, Eugene: *See—*
Breslow, Jeffrey D.; and Jaworski, Eugene, 3,764,136.
Jeanmonod, Jacques, to Heuer-Leonidas S.A. Timepiece mounting means. 3,763,646, Cl. 58-88.00r.
Jedlicka, Glen J.; Hill, Warner Mike; and Heck, Joseph G., to Armour and Company. Measuring surface bacteria. 3,764,480, Cl. 195-103.50r.
Jedynak, Leo: *See—*
Bert, Paul A.; Jedynak, Leo; and Guif, Stanley E., 3,765,016.
Jelley, Frank Edward Charles, to Denley-Tech Limited. Apparatus for mixing the contents within containers. 3,764,112, Cl. 259-57.000.
Jenaer Glaswerke Schott & Gen.: *See—*
Kitze, Willi; and Reitmayer, Franz, 3,764,354.
Jennings, Thomas C.; and Fletcher, Charles W., Jr., to Dart Industries, Inc., mesne. Organotin stabilizer systems. 3,764,571, Cl. 260-23.0xa.
Jentsch, Hans G. Disposable packages for flexible synthetic-resin containers. 3,764,000, Cl. 206-65.00r.
Jerussi, Robert A.: *See—*
Orlando, Charles M.; Emerick, Carl M.; and Jerussi, Robert A., 3,764,375.
Jetsew Inc.: *See—*
Rockerath, John L., 3,763,800.
Jobst, Ludwig. Classifying apparatus, particulárly for sorting coins. 3,763,871, Cl. 133-3.00r.
Jochimski, Stefan L. Head vibrator. 3,763,853, Cl. 128-36.000.
John, Veit, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Lubricating system for internal combustion engines. 3,763,960, Cl. 184-6.130.
Johnson & Johnson: *See—*
Buese, George J., 3,763,858.
Mesek, Frederick K.; and Repke, Virginia L., 3,763,863.
Johnson, Carl W.: *See—*
Voss, Joseph A.; and Johnson, Carl W., 3,764,438.
Johnson, Justin O., Jr., to Honeywell Inc. Electrochemical oxygen demand measuring system. 3,764,508, Cl. 204-195.00b.
Johnson, Oliver C.: *See—*
Toma, Joseph R.; and Johnson, Oliver C., 3,764,959.
Johnson, Robert I. Vehicle light-ignition switching arrangement. 3,764,816, Cl. 307-10.01s.
Johnson Rubber Company, The: *See—*
Sudyk, John R., 3,763,595.
Johnson, Thomas D.: *See—*
Dornbusch, Paul E.; and Johnson, Thomas D., 3,763,678.
Jones, Darryl S.: *See—*
Hong, Se J.; Jones, Darryl S.; and Ostapko, Daniel L., 3,764,788.
Jones, Eric Douglas: *See—*
Eggleton, Geoffrey Donald; and Jones, Eric Douglas, 3,763,948.
Jones, Frank J.: *See—*
Ehrman, Chester S.; Scheib, Louis; Worsley, Charles S.; Jones, Frank J.; and Freeborg, Robert M., 3,763,770.
Jones, Hugh Gwynfryn. Liquid level control devices. 3,763,881, Cl. 137-414.000.
Jones, Peter Hadley; and Somani, Pitambar, to Abbott Laboratories. Iodinin as an anti-hypertensive agent. 3,764,679, Cl. 424-250.000.
Jorgensen, Svend M. Closure assembly for pressure vessels. 3,764,039, Cl. 220-55.00a.
Josephson, Bertil August: *See—*
Bergstrom, Lars Jonas; Buchi, Nils Harje; Hultman, Erik Helmer; Josephson, Bertil August; Vinnars, Erik; Dahlinder, David Georg; and Furst, Peter, 3,764,703.
Joy, Raymond D., to Burlington Industries, Inc. Ends down monitoring. 3,763,702, Cl. 73-160.000.
Joyce, Ronald W.: *See—*
Fisher, Earl L.; and Joyce, Ronald W., 3,763,843.
Jugle, Leonard L.: *See—*
Elder, Clarence H.; and Jugle, Leonard L., 3,764,151.
Julian, Donald V.: *See—*
Heckert, David C.; and Julian, Donald V., 3,764,617.
Juskey, John S.: *See—*
Strem, Joseph G.; Juskey, John S.; and Moschovis, Elias P., 3,764,323.
K-Line Industries, Inc.: *See—*
Kammeraad, John H., 3,764,204.
K-Tron Corporation: *See—*
Bullivant, Kenneth W., 3,763,943.
Kabushiki Kaisha: *See—*
Hayami, Tadao; Nakatani, Atsutada; and Shimuzu, Munetaka, 3,763,757.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Yoda, Tadashi; Muraki, Kiichi; and Kishitani, Masatoshi, 3,763,953.
Kabushiki-Kaisha Eishin: *See—*
Funakubo, Toshiei, 3,763,721.
Kachel, Volker, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Method of and measuring chamber for measuring

properties of particles suspended in liquid. 3,764,901, Cl. 324-71.0cp.

Kadoya, Teruichi; Kobayashi, Kunio; Kobayashi, Tetuo; and Koga, Yasuyuki, to Takarazuka Control Cable Co., Inc. Winterized control cable. 3,764,779, Cl. 219-201.000.

Kafka, Wilhelm, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Electrical conductor for superconductive windings or switching paths. 3,764,725, Cl. 174-15.00c.

Kagan, Fred: *See—*
Argoudelis, Alexander D.; Bannister, Brian; Kagan, Fred; and Magerlein, Barney J., 3,764,672.

Kahlen, Horst: *See—*
Buxbaum, Arne; and Kahlen, Horst, 3,764,885.

Kahmann, Manfred. Grip pulley. 3,763,714, Cl. 74-230.300.

Kakizaki, Katsunobu; Kurakami, Osamu; and Inoue, Yasukuzo, to Nippon Electric Company, Limited. Method of producing insulated-gate field-effect transistors. 3,764,413, Cl. 148-188.000.

Kalart Company, Inc., The: *See—*
Schwartz, Morris; Chedister, Conkling; and Beckman, Frank H., 3,764,203.

Kaltenegger, Benno. Steering transmission mechanism and vehicles with rigidly mounted axles incorporating said mechanism. 3,763,944, Cl. 180-6.200.

Kaman, Andrew J.: *See—*
Chang, Wen-Hsuan; and Kaman, Andrew J., 3,764,457.

Kammeraad, John H., to K-Line Industries, Inc. Valve guide boring fixture. 3,764,204, Cl. 408-75.000.

Kampher, Helmut; Ohlschlager, Hans; and Von Konig, Anita, to Agfa-Gevaert Aktiengesellschaft. Photographic dry copying process with a neutrostyryl dye. 3,764,321, Cl. 96-29.00d.

Kampher, Helmut; Gotze, Johannes; Von Konig, Anita; and Ohlschlager, Hans, to Agfa-Gevaert Aktiengesellschaft. Photography dry copying process with a merocyanine dye. 3,764,322, Cl. 96-29.00d.

Kanazawa, Teiichi; Ogawa, Shigeru; Matsui, Sadayoshi; and Shimizu, Masamichi, to Ihara Chemical Industry Co., Ltd. and Sagami Chemical Research Center. Process for preparation of carbonyl sulfide. 3,764,661, Cl. 423-416.000.

Kanda, Tatsuo: *See—*
Suda, Hideaki; Kanda, Tatsuo; Murata, Yoshiro; Hida, Hiromu; and Kubo, Toshio, 3,764,664.

Kando, Hiroaki: *See—*
Inagami, Kaoru; Mitsui, Isamu; and Kando, Hiroaki, 3,764,710.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Watanabe, Kiyoshi; Yano, Hirohisa; Suzuki, Kenji; Mekata, Yoshimitsu; and Kawaharada, Hajime, 3,764,474.

Kaneko, Thomas M., to BASF Wyandotte Corporation. Detergent intermediate and process therefor. 3,764,541, Cl. 252-89.000.

Kanno, Takeshi: *See—*
Kawazu, Mitsutaka; Kanno, Takeshi; Saito, Seiichi; and Tamaki, Hajime, 3,764,607.

Karmas, George, to Ortho Pharmaceutical Corporation. Aryl substituted-hydroxy substituted cyclohexenecarboxylic acids and esters. 3,764,613, Cl. 260-340.500.

Karnaugh, Maurice, to International Business Machines Corporation. High speed line equalizer. 3,764,914, Cl. 325-42.000.

Karzmar, Martin. Stadium seat and bottle carrier. 3,763,972, Cl. 190-8.000.

Kashio, Toshio, to Casio Computer Co., Ltd. Number input device using a multi-zero input key. 3,764,791, Cl. 235-156.000.

Kasinoff, Harvey A., to United States of America, Army, mesne. Mine-actuating system using one-shot MV timing circuit and timed MV feedback inhibitor. 3,763,780, Cl. 102-19.200.

Kasuga, Naoatu: *See—*
Yamamoto, Hiroya; Tokita, Yuichiro; Fuziyoshi, Kenzi; Kasuga, Naoatu; Akamatsu, Akiyuki; and Sakurai, Hiroo, 3,764,487.

Katz, Joseph J., to United Food Industries, Inc. No-cholesterol mayonnaise-type salad dressing. 3,764,347, Cl. 426-196.000.

Katzirkatchalsky, Aharon; Lahav, Eitan; and Sode-Morgensen, Mogens Torben, to Israel, State of, Ministry of Agriculture, The. Polypeptidic anti-biotic substances derived from casein. 3,764,670, Cl. 424-118.000.

Kaufman, Jesse C.: *See—*
Greenwood, Ivan A.; and Kaufman, Jesse C., 3,764,512.

Kawaharada, Hajime: *See—*
Watanabe, Kiyoshi; Yano, Hirohisa; Suzuki, Kenji; Mekata, Yoshimitsu; and Kawaharada, Hajime, 3,764,474.

Kawakubo, Kazuo: *See—*
Takahashi, Isao; Fujii, Motoharau; Kawakubo, Kazuo; Agriga, Masao; and Sugiura, Susumu, 3,764,208.

Kawazu, Mitsutaka; Kanno, Takeshi; Saito, Seiichi; and Tamaki, Hajime, to Tanabe Seiyaku Co., Ltd. 3-Piperidylidene methane derivatives. 3,764,607, Cl. 260-293.680.

Kay Laboratories, Inc.: *See—*
Stanley, Joseph, Jr., 3,763,622.

Kearn, Bernard H.: *See—*
Tschinkel, Johann G.; Giamei, Anthony; and Kearn, Bernard H., 3,763,926.

Keim, Siegfried; and Schmid, Eckart, to Siemens Aktiengesellschaft. Arrangement for wide band coupling of a coaxial line to a hollow conductor. 3,764,942, Cl. 333-33.000.

Keith, Marvin W., Jr.: *See—*
Briggs, George S.; and Keith, Marvin W., Jr., 3,763,785.

Kelch, Heinz: *See—*
Spauszus, Siegfried; Fichter, Manfred; and Kelch, Heinz, 3,764,782.

Keller, Anthony T. Fixture for holding two bellows members together for the welding thereof. 3,764,127, Cl. 269-287.000.

Keller, Juergen H. H.; and Sprague, Robert H., to Itek Corporation. Free radical direct positive photocopy process. 3,764,319, Cl. 96-3.000.

Kemerer, Douglas W.: *See—*
Donofrio, Nicholas M.; Kemerer, Douglas W.; and Raymond, John, Jr., 3,764,823.

Kemp, Woodrow E., to Koppers Company, Inc. Wood treated with a preservative composition. 3,764,377, Cl. 117-147.000.

Kemp, Woodrow E., to Koppers Company, Inc. Wood treated with a preservative composition. 3,764,378, Cl. 117-147.000.

Kempton, William G. Expansion compensating dispensing valve. 3,764,104, Cl. 251-357.000.

Kenco Corporation: *See—*
Russell, Robert J.; and Pierce, Edwin F. (said Russell assor. to), 3,764,049.

Kennametal Inc.: *See—*
Leibee, Donald L.; and Oaks, Seibert S., 3,763,941.

Kenney, Joseph R.: *See—*
Tyburski, Robert M.; Russell, Donald W.; Mayberry, Brian D.; and Kenney, Joseph R., 3,764,978.

Kenton, Joseph R., to Phillips Petroleum Company. Method of improving the bond of polythiol sealant to building materials. 3,764,372, Cl. 117-72.000.

Keoseian, Richard Suren, mesne: *See—*
Laumann, David H. E., 3,763,502.

Kerr-McGee Corporation: *See—*
Lucid, Michael F., 3,764,274.

Kerst, Al F.; and Douros, John D., Jr., to Gates Rubber Company, The. Diethyl cyanomethyl phosphonate as an antimicrobial agent. 3,764,676, Cl. 424-210.000.

Kerst, Al F.; and Douros, John D., Jr., to Gates Rubber Company, The. Diethyl beta aminoethylphosphonate as an antimicrobial agent. 3,764,677, Cl. 424-211.000.

Khalafalla, Sanaa E.; and Reimers, George W., to United States of America, Interior. Magnetofluids and their manufacture. 3,764,540, Cl. 252-62.550.

Khan, Amir U., to United States of America, Agriculture. Table thresher. 3,763,868, Cl. 130-27.00m.

Kidde, Walter, & Company, Inc.: *See—*
Greenwald, Harry; and Lambiris, Christos, 3,763,984.

Kidnocker, Robert E., Jr. Sequentially coded actuating device. 3,764,982, Cl. 340-147.00r.

Kienzle Apparate G.m.b.H.: *See—*
Spauszus, Siegfried; Fichter, Manfred; and Kelch, Heinz, 3,764,782.

Kienzle, Jean Andre Paul; Hoille, Michel Ernest Antoine; and Cabut, Louis Antoine, to Ugine Kuhlmann. Phthalocyanines. 3,764,361, Cl. 106-288.00q.

Kiessling, Roland Richard: *See—*
Troselius, Lars Johan Bertil; Sparre, Claes Ulf Casimir; and Kiessling, Roland Richard, 3,764,302.

Kikkoman Shoyu Co., Ltd.: *See—*
Aonuma, Tatsuo; Yasuda, Atsushi; Yuasa, Toshizumi; Arai, Akira; Mogi, Koya; and Yokotsuka, Tamotsu, 3,764,708.

Kikuchi, Shintaro: *See—*
Yurugi, Shojiro; and Kikuchi, Shintaro, 3,764,598.

Kikuyama, Munetsugu: *See—*
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Kilpatrick, David G.: *See—*
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Kilpper, Gerhard: *See—*
Armbrust, Herbert; Kilpper, Gerhard; Koehler, Waldemar; Quadbeck-Seeger, Hans Juergen; Schecker, Hans Georg; and Sturm, Hans Juergen, 3,764,631.

Kim, Gwan: *See—*
Maselle, James Michael; Ernest, Michael Vance; and Kim, Gwan, 3,764,564.

Kim, Sunyong P. World clock. 3,763,645, Cl. 58-43.000.

Kimball, Arthur A.: *See—*
Mac Mahon, Paul H., 3,764,976.

Kimberlin, Charles Newton, Jr.; and Voorhies, Alexis, Jr., to Esso Research and Engineering Company. Hydrocarbon conversion system. 3,764,520, Cl. 208-111.000.

Kimberly-Clark Corporation: *See—*
Dunning, Charles E., 3,764,451.
Peerenboom, Robert J., 3,764,426.
Schrading, Mark S., 3,763,857.
Voss, Joseph A.; and Johnson, Carl W. (said Voss assor. to said), 3,764,438.

Kimbrell, James P.: *See—*
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Kimura, Kazuo: *See—*
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Kimura, Michio: *See—*
Nakamura, Yasushi; Kimura, Michio; Suzuki, Yoshio; Hamma, Noritaka; Fukumaru, Toshitsugu; Aono, Shunji; and Fukushima, Hideaki, 3,764,704.

Kincs, Frank R.: *See—*

Henthorn, Larry J.; and Kincs, Frank R., 3,764,715.

King, James Robert; and Myers, Gerald D., to King Nutronics Corporation. Illumination and viewing system for vacuum or pressure chamber. 3,764,794, Cl. 240-2.00r.

King Nutronics Corporation: *See*—
King, James Robert; and Myers, Gerald D., 3,764,794.

King, William M., to United States of America, Interior. Dynamics reverse osmosis membranes of ultrathin discs. 3,764,526, Cl. 210-23.000.

Kiovsky, Thomas E., to Shell Oil Company. Process for hydrocracking heavy hydrocarbons. 3,764,515, Cl. 208-10.000.

Kirby, Harold W., to United States of America, Atomic Energy Commission. Removal of radioisotopes from waste solutions. 3,764,553, Cl. 252-301.10r.

Kirchner, Frederick K., to Sterling Drug Inc. Anticoccidiosis method and compositions. 3,764,694, Cl. 424-285.000.

Kirincic, Joseph A.; and Heitner, Raymond J., to Dreis & Krump Manufacturing Co. Press brake ram leveling. 3,763,690, Cl. 72-447.000.

Kirschnek, Helmut: *See*—
Hildebrand, Dietrich; and Kirschnek, Helmut, 3,764,262.

Kishechnikov, Sergei Andreevich: *See*—
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Kishitani, Masatoshi: *See*—
Yoda, Tadashi; Muraki, Kiichi; and Kishitani, Masatoshi, 3,763,953.

Kisling, James W., III; and Young, David E., to Schlumberger Technology Corporation. Drilling expansion joint apparatus. 3,764,168, Cl. 285-302.000.

Kitanosono, Hidehiro: *See*—
Mannaka, Toshio; Kitanosono, Hidehiro; Matsuka, Shigemichi; and Shingai, Sadanori, 3,763,677.

Kitrell, James R., to Chevron Research Company. Hydrocarbon conversion catalyst. 3,764,562, Cl. 252-455.00r.

Kitze, Willi; and Reitmayer, Franz, to Jenaer Glaswerke Schott & Gen. Fluoride borosilicate glass having low refraction, an optical pair independent of temperature, and an elevated dispersion. 3,764,354, Cl. 106-54.000.

Kiyasu, Zenichi; and Nakamura, Tsutomu, to Iwatsu Electric Co., Ltd. Address selection system. 3,764,812, Cl. 250-213.00a.

Klassen, Laverne M.; and Frost, Doris V. Pressure operated lift. 3,764,106, Cl. 254-8.00r.

Klein, Larry; and Lefkowftz, Elliot J. Sealing apparatus and method for refuse compactor. 3,763,621, Cl. 53-24.000.

Kleinewefers, John., Sohne: *See*—
Schiffer, Gunter; and Lopata, Karl Peter, 3,763,671.

Klenk, Emil. Conveyor table for sheet material. 3,763,992, Cl. 198-127.00r.

Klimashko, Vladimir Vasilievich: *See*—
Sudnishnikov, Boris Vasileivich; Kostylev, Alexander Dmitrievich; Curkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; Klimashko, Vladimir Vasilievich; and Plavskikh, Vladimir Dmitrievich, 3,763,939.

Klink, Wolf-Dieter: *See*—
Fiala, Ernst, 3,764,160.

Klose, Werner, to Knapsack Aktiengesellschaft. Process of making phosphorous and halogen containing polyols. 3,764,640, Cl. 260-978.000.

Klugman, Warren L., to Ceilcote Company. Modular structural member and method and apparatus for making same. 3,764,034, Cl. 220-4.00e.

Kluksdahl, Harris E., to Chevron Research Company. Catalyst activation process and activated catalyst. 3,764,557, Cl. 252-415.000.

Kmai, Tomoyasu: *See*—
Suzuki, Ikuo; and Kmai, Tomoyasu, 3,763,698.

Kmieciak, Henry A.; and Gadd, John D., to TRW Inc. Protective alloy coating and method. 3,764,279, Cl. 29-194.000.

Knapsack Aktiengesellschaft: *See*—
Ehlers, Klaus-Peter; and Harnisch, Heinz, 3,764,655.
Klose, Werner, 3,764,640.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Certain substituted methylbenzoic acids and substituted methycycloherane carboxylic acids. 3,764,621, Cl. 260-514.00r.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Irritant composition comprising 2-(4-substituted cyclohexylamino)-2-oxazolines. 3,764,682, Cl. 424-272.000.

Knowles, Stewart R. Stod lock. 3,764,059, Cl. 229-23.00r.

Knusli, Enrico; and Varsanyi, Denis, to Ciba-Geigy Corporation. Organotin-substituted s-triazines for controlling insects, acarinal, fungi, bacteria, and mollusks. 3,764,678, Cl. 424-245.000.

Kobayashi, Atsuo: *See*—
Echigoya, Etsuro; and Kobayashi, Atsuo, 3,764,636.

Kobayashi, Kunio: *See*—
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Kobayashi, Nobutsugu, to Shoei Kabushiki Kaisha. Heat exchanger. 3,763,831, Cl. 122-165.000.

Kobayashi, Tetuo: *See*—
Kadoya, Teruichi; Kobayashi, Kunio; Kobayashi, Tetuo; and Koga, Yasuyuki, 3,764,779.

Kobe Steel Ltd.: *See*—
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Kobori, Toshio: *See*—
Kuramoto, Yoshio; Tsujimoto, Kayoshi; and Kobori, Toshio, 3,763,755.

Kodama, Hiroshi: *See*—
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Koehler, Waldemar: *See*—
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Koehn, Erich: *See*—
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Koehring Company: *See*—
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Koenitzer, Joachim: *See*—
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Koga, Masashi: *See*—
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Koga, Yasuyuki: *See*—
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Kogyo Gijutsuin; a/k/a Agency of Industrial Science and Technology, Ministry of International Trade and Industry: *See*—
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Kohata, Mamoru: *See*—
Abe, Shigeo; and Kohata, Mamoru, 3,764,476.

Kohler, Hubert; and Schmidt, Fritz, to Siemens Aktiengesellschaft. Terminal for electrical apparatus with conductors cooled down to a low temperature. 3,764,726, Cl. 174-15.0bh.

Kohner Bros., Inc.: *See*—
Stubbmann, Albert, 3,764,142.

Koike, Suetoshi: *See*—
Yoshida, Minoru; Inoue, Minoru; and Koike, Suetoshi, 3,764,482.

Kojima, Akio: *See*—
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Kosmahl, Henry G., to United States of America, National Aeronautics and Space Administration. Electron beam controller. 3,764,850, Cl. 315-538.000.

Kosowsky, David I.; Ferrari, Andres; and Hurtig, Carl R., to Damon Corporation. Constituents-measuring chemical analyzer having sample-processing conduit feeding aliquot-processing conveyor system. 3,764,268, Cl. 23-253.00r.

Kosowsky, Lester H., to United Aircraft Corporation. Passive radar glide slope orientation indication. 3,765,019, Cl. 343-5.01s.

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Kouth, Herbert; Marr, Fritz; and Roos, Rudolf, to Golde, H. T., GmbH. Device for limiting rotation. 3,763,710, Cl. 74-10.200.

Kowalewski, Edward C., to Admiral Corporation. Releasable lock support for printed circuit module. 3,764,729, Cl. 174-138.00d.

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Krakau, Carl Erik Torsten. Method and apparatus for determining the intraocular pressure. 3,763,696, Cl. 73-80.000.

Kramer, Heinrich; Butz, Josef; Muller, Richard; Thoma, Ludwig; Pollmann, Johann; Zielbauer, Hans; and Bernklau, Xaver, to Flachglas AG. Method and apparatus for making channelled sheets from deformable materials. 3,764,431, Cl. 156-156.000.

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Krenzer, John; and Richter, Sidney B., to Velsicol Chemical Corporation. Certain thiadiazoles as fungicides. 3,764,685, Cl. 424-270.000.

Kriegel, Carl P. Pneumatic accumulator. 3,763,893, Cl. 137-625.600.

Krikorian, Oscar H., to United States of America, Atomic Energy Commission. Chemical processing in geothermal nuclear chimney. 3,764,660, Cl. 423-362.000.

Krings, Hans; and Kramling, Franz, to Saint-Gobain Industries. Safety windshield. 3,764,178, Cl. 296-84.00r.

Krinke, Harlan L., to Minnesota Mining and Manufacturing Company. Vehicle headlight. 3,764,797, Cl. 240-7.100.

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Land, Robert Lee, 40% to Smith, Horace. Stringed musical instrument having tone-varying means. 3,763,735, Cl. 84-200.000.

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Langella, Antonio; and Savastano, Giorgio. Electronic direct-current watthour meter. 3,764,907, Cl. 324-141.000.

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Langley, Robert, to Ciba-Geigy AG. Process for preparing phthalocyanine pigments. 3,764,360, Cl. 106-288.00q.
Lankenau, Richard F. Converter dolly with slideable fifth-wheel for use in combination with tractor-trailer rigs. 3,764,164, Cl. 280-415.00b.
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Loss, Michael. Tape cassette holder. 3,764,003, Cl. 206-.830.

Lotfy, Mohamed Hussein. Tethered ball apparatus including paddle and wear resistant tether connection to ball. 3,764,140, Cl. 273-95.00a.

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Lucero, Jack A.: *See—*
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Lucid, Michael F., to Kerr-McGee Corporation. Vanadium extraction using mixture of alkyl phosphine oxides and fluorinated β-diketones. 3,764,274, Cl. 423-63.000.

Luck, David Lee; and Thullen, Philip, to Massachusetts Institute of Technology. Double shielded superconducting field winding. 3,764,835, Cl. 310-52.000.

Luckenbill, Lawrence F.: *See—*
Leopold, Wilbur R., Jr.; Smith, John J.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Daghe, Joseph L., 3,763,880.

Ludin, Ludwig: *See—*
Laing, Nikolaus; Laing, Ingeborg; and Ludin, Ludwig, 3,764,186.

Lukasik, John A.; and McCarthy, Patrick J., to Ford Motor Company. Adjustable connection. 3,764,158, Cl. 280-124.00r.

Lupinski, John H., to General Electric Company. Electroconductive coatings on non-conductive substrates. 3,764,280, Cl. 29-195.000.

Luttle, James W., to Cogar Corporation. Diminishing mask wearout during terminal formation. 3,764,379, Cl. 117-212.000.

Lutze, Walter: *See—*
Burckhardt, Manfred H.; Lutze, Walter; and Schwerdt, Paul, 3,764,837.

Lyon, Richard K., to Esso Research and Engineering Company. Thermal alkylation with low paraffin to ethylene mole ratio. 3,764,637, Cl. 260-683.470.

Lytle, Thomas J., to Union Carbide Corporation. Apparatus for selectively scarfing metal bodies. 3,764,122, Cl. 266-23.00h.

Mabo, Stanley: *See—*
Merlat, Joanny, 3,763,569.

Mabuchi, Isao: *See—*
Hatano, Isao; and Mabuchi, Isao, 3,764,997.

Mac Mahon, Paul H., 40% to Williams, David H., Jr., 10% to Curry, Kenneth V., 5% to Kimball, Arthur A. and 45% to Shephard, Donald L. Pedal mounted signal light. 3,764,976, Cl. 340-87.000.

MacDonald, Gilmour C. Military darts. 3,763,786, Cl. 102-92.000.

MacDonald, John, to General Electric Company. Hydraulic thrust indicator for rotatable shaft. 3,763,700, Cl. 73-140.000.

Macheboeuf, Guy R., to Office de Radiodiffusion-Television Francaise. Method and apparatus for replacing a part of a first television image by a part of a second television image. 3,764,732, Cl. 178-5.40r.

MacIver, Bernard A.: *See—*
McKinnon, Matthew C.; and MacIver, Bernard A., 3,764,507.

MacKeller, Donald G.: *See—*
Lancelot, Charles J.; and MacKeller, Donald G., 3,764,586.

Mackie, Walter Blair: *See—*
Hyde, Mide Arthur; Chalmers, Peter Denton; and Mackie, Walter Blair, 3,763,614.

Macleod, David M. Synthetic petrolatum composition. 3,764,537, Cl. 252-56.00r.

Macovei, Nicolae, to Uzina Constructii Masini Agricole "7 NOEMBRIE". Hardening machine. 3,763,682, Cl. 72-46.000.

MacVey, Gary Leo; and Hilgert, William, to Deere & Company. Fixed level, anti-syphon hydraulic sump tank. 3,763,887, Cl. 137-566.000.

Madison, Grace L. C. Empathy game. 3,764,135, Cl. 273-1.00r.

Maeda, Shigeyoshi: *See—*
Nishihara, Toshiro; Asano, Hidejiro; Maeda, Shigeyoshi; and Oyagi, Yashichi, 3,764,398.

Maerfeld, Charles: *See—*
Gires, Francois; Maerfeld, Charles; and Tournois, Pierre, 3,764,928.

Magerlein, Barney J.: *See—*
Argoudelis, Alexander D.; Bannister, Brian; Kagan, Fred; and Magerlein, Barney J., 3,764,672.

Magic Mold, Inc.: *See—*
Bienenfeld, Myrou, 3,763,866.

Mahieu, Marc; Andre, Elie; and Le Duc, Jean-Marc, to U.S. Philips Corporation. Method of obtaining gallium aluminum arsenide for an electroluminescent diode. 3,764,408, Cl. 148-171.000.

Mainteks, Walter. Knock-down kit for forming lamp shades. 3,764,801, Cl. 240-108.00a.

Makkay, Egon J. V.; and Pesce, John J., to RCA Corporation. Cutting pliers. 3,763,560, Cl. 30-124.000.

Malen, Charles; Danree, Bernard; and Desnoyers, Pierre, to Science Union et Cie, Societe Francaise de Recherche Medicale. Treatment of thrombosis. 3,764,702, Cl. 424-317.000.

Mallory, Herbert D., to United States of America, Navy. Shaped charge warheads. 3,763,784, Cl. 102-56.000.

Mallory, P. R., & Co., Inc.: *See—*
Helfen, Ralph K., 3,763,530.
Marincic, Nikola, 3,764,388.

Malloy, John D., to General Motors Corporation. Multi-speed automatic transmission. 3,763,719, Cl. 74-761.000.

Malloy, John F., to Norton Company. Coated abrasive belt joint. 3,763,604, Cl. 51-399.000.

Malmaison, Rueil: *See—*
Biejean, Claude; Bourdoncle, Bernard; and Malmaison, Rueil, 3,764,534.

Malone, Martin; and Dickie, Robert J., to Singer Company, The. Electrical conductor feed through and seal. 3,764,730, Cl. 174-151.000.

Mamo, Anthony C.: *See—*
Collier, Donald W.; Hoppesch, Joseph P.; and Mamo, Anthony C., 3,764,270.

Man, Jerome V. Apparatus for trimming sails. 3,763,703, Cl. 73-182.000.

Manack, Anthony W.; and Sulak, Michael A., to Logetronics Inc. Control unit for minimizing water and power consumption in automatic film processors. 3,763,758, Cl. 95-89.00r.

Manaka, Nobuji: *See—*
Aono, Shigeo; Usux, Saburo; and Manaka, Nobuji, 3,763,720.

Mandels, Mary H.; and Kostick, John A., to United States of America, Army. Enzymatic hydrolysis of cellulose to soluble sugars. 3,764,475, Cl. 195-33.00r.

Manders, Goderfridus Johannes, to U.S. Philips Corporation. Method of and device for measuring the length of a magnetizable tape. 3,764,896, Cl. 324-34.001.

Manke, Herbert R.; and Flatley, James P., to United States of America, Navy. Signaling searchlight. 3,764,798, Cl. 240-22.000.

Mannaka, Toshio; Kitanosono, Hidehiro; Matsuka, Shigemichi; and Shingai, Sadanori, to Hitachi, Ltd. Automatic plate-thickness control method for rolling mill. 3,763,677, Cl. 72-8.000.

Manning, Kenneth G., to Schlumberger Technology Corporation. Well bore data-transmission apparatus with debris clearing apparatus. 3,764,970, Cl. 340-18.0nc.

Mansei Kogyo Kabushiki Kaisha: *See—*
Moriya, Nobuyoshi, 3,764,256.

Marbelite Company, The: *See—*
Siklos, Gregory; and Rudden, James B., 3,764,972.

Marchini, Dino, to Societa Italiana Telecomunicazioni Siemens S.p.A. Method of and means for emitting interrogation codes to supervise repeaters of PCM telecommunication system. 3,764,760, Cl. 179-175.31r.

Marincic, Nikola, to Mallory, P. R., & Co., Inc. Chloride free amalgamation of zinc powder using acetic, oxalic and boric acids. 3,764,388, Cl. 136-31.000.

Marine Colloids, Inc.: *See—*
Habersberger, Francis, 3,764,707.
Saravis, Calvin A., 3,764,513.

Markovac, Anica: *See—*
Ash, Arthur B.; Stevens, Calvin E.; and Markovac, Anica, 3,764,604.

Marks, Burton S.; and Chiesa, Peter J., Jr., to Lockheed Aircraft Corporation. Zinc-siloxane polymer and coating and method for making the same. 3,764,574, Cl. 260-30.6sb.

Marley Company, The: *See—*
Fordyce, Homer E., 3,764,121.

Marr, Fritz: *See—*
Kouth, Herbert; Marr, Fritz; and Roos, Rudolf, 3,763,710.

Marsalka, Joseph P.: *See—*
Spademan, Charles F.; and Marsalka, Joseph P., 3,764,986.

Martel, Louis William: *See—*
Olano, Francisco Omar; Fordy, James Keith; and Martel, Louis William, 3,764,257.

Martin & Pagenstecher GmbH: *See—*
Horn, Erhard; Konig, Gert; and Koenitzer, Joachim, 3,764,125.

Martin, Jacob H., to Massachusetts Institute of Technology. Heat transfer in electronic equipment. 3,764,856, Cl. 317-100.000.

Martin, Macklin F. Discarded tire carcasses secured together by fasteners to form a chain or mat. 3,764,446, Cl. 161-36.000.

Martin, Richard John: *See—*
Hope, Paul; Martin, Richard John; and Stark, Bernard Peter, 3,764,584.

Martindale, David L.: *See—*
Dale, Alan M.; Martindale, David L.; and Mursinna, Richard C., 3,764,036.

Martini, Paolo: *See—*
Pastorelli, Romolo; and Martini, Paolo, 3,763,616.

Marx, Louis, & Co. Inc., mesne: *See—*
Kuramochi, Shigeaki, 3,763,988.

Marzochi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber-reinforced elastomers. 3,764,452, Cl. 161-140.000.

Maschinen- und Bohrgeratefabrik Alfred Wirth & Co., KG: *See*—
Tibussek, Fritz, 3,763,666.

Maschinenbau Ulm GmbH: *See*—
Brodersen, Helmut, 3,763,938.

Maschinenfabrik Schweiter AG: *See*—
Gerber, Robert, 3,764,090.

Maselle, James Michael; Ernest, Michael Vance; and Kim, Gwan, to Grace, W. R., & Co. Catalyst for control of automobile exhaust emissions. 3,764,564, Cl. 252-465.000.

Masloboev-Shvedov, Alexei Alexeevich: *See*—
Minachev, Khabib Minachevich; Mortikov, Evgeny Sergeevich; Leontiev, Alexandr Semenovich; Masloboev-Shvedov, Alexei Alexeevich; and Kononov, Nikolai Fedorovich, 3,764,563.

Mason, David P., to Beede Electrical Instrument Co., Inc. High efficiency permanent magnet meter. 3,764,910, Cl. 324-146.000.

Massachusetts Institute of Technology: *See*—
Luck, David Lee; and Thullen, Philip, 3,764,835.
Martin, Jacob H., 3,764,856.

Masuda, Noboru; and Kuroyanagi, Masasi, to Denki Onkyo Co., Ltd. Switching circuit. 3,764,818, Cl. 307-296.000.

Masuyama, Takeshi: *See*—
Matsuoka, Michio; Masuyama, Takeshi; and Iida, Yoshio, 3,764,566.

Matesa, Joseph M.; and Farabaugh, Aloysius W., to PPG Industries, Inc. Manufacture of float glass having controlled width. 3,764,285, Cl. 65-99.00a.

Mathews, Glenn William; Head, Billy Duane; and Wing, Milton Silas, to Dow Chemical Company, The. Process for the upgrading of heavy cracking residues by hydrogenation. 3,764,521, Cl. 208-143.000.

Mathis, Ronald D.: *See*—
Dix, James S.; and Mathis, Ronald D., 3,764,579.

Matsuda, Masao, to Matsushita Electric Industrial Co. Ltd. Sewing machine electrical drive device. 3,763,803, Cl. 112-219.00a.

Matsui, Sadayoshi: *See*—
Kanazawa, Teiichi; Ogawa, Shigeru; Matsui, Sadayoshi; and Shimizu, Masamichi, 3,764,661.

Matsui, Takeshi: *See*—
Yoshida, Shigeaki; and Matsui, Takeshi, 3,764,326.

Matsuka, Shigemichi: *See*—
Mannaka, Toshio; Kitanosono, Hidehiro; Matsuka, Shigemichi; and Shingai, Sadanori, 3,763,677.

Matsumoto, Kenichi: *See*—
Inoue, Isao; Sekine, Susumu; Hirose, Takeshi; Matsumoto, Kenichi; and Miyasawa, Nobuo, 3,764,047.

Matsuo, Yoshihiro; Sasaki, Hiromu; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Method of manufacturing fine grain ceramic barium titanate. 3,764,529, Cl. 252-1.000.

Matsuoka, James T., to Intercole Automation, Inc. Continuous mixer. 3,764,118, Cl. 259-192.000.

Matsuoka, Michio; Masuyama, Takeshi; and Iida, Yoshio, to Matsushita Electric Industrial Co., Ltd. Voltage nonlinear resistors. 3,764,566, Cl. 252-518.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kuwazaki, Masahiro; Ota, Akira; and Takata, Toshikatsu, 3,764,392.
Matsuda, Masao, 3,763,803.
Matsuo, Yoshihiro; Sasaki, Hiromu; and Hayakawa, Shigeru, 3,764,529.
Matsuoka, Michio; Masuyama, Takeshi; and Iida, Yoshio, 3,764,566.

Matsushita Electronics Corporation: *See*—
Ninagawa, Chikayoshi; Ashizaki, Shigeya; and Okamoto, Masahiro, 3,764,366.

Matsushita, Kunijiro. Pile driving and drawing apparatus. 3,763,654, Cl. 61-53.500.

Mattel, Inc.: *See*—
Summerfield, William F., 3,763,969.

Matthews, Frederick R., Jr.; and White, Erskine C., to United States of America, National Aeronautics and Space Administration. Lightweight, variable solidity knitted parachute fabric. 3,764,097, Cl. 244-145.000.

Matto, Lawrence R., to Avco Corporation. Piloting device for split housings having different thermal coefficients of expansion. 3,764,226, Cl. 415-219.00r.

Matuschek, Max, to Siemens Aktiengesellschaft. Apparatus for infrared soldering. 3,764,772, Cl. 219-85.000.

Mauger, Leroy L.; and Gilbert, Robert W., to Beloit Corporation. Transfer arm for blow molding apparatus. 3,764,246, Cl. 425-135.000.

Max Factor & Co.: *See*—
Montgomery, Robin M.; and Messner, Gordon E., 3,763,870.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Kachel, Volker, 3,764,901.
Kafka, Wilhelm, 3,764,725.

May, Peter John: *See*—
Elks, Joseph; May, Peter John; and Phillipps, Gordon Hanley, 3,764,616.

Mayberry, Brian D.: *See*—
Tyburski, Robert M.; Russell, Donald W.; Mayberry, Brian D.; and Kenney, Joseph R., 3,764,978.

Maynard, Fred B., to Motorola, Inc. Electronic musical instrument. 3,764,721, Cl. 84-1.240.

Mays, Kenneth R. Trolling attachment for outboard motors. 3,763,819, Cl. 115-17.000.

Mazzei, Marcello: *See*—
Fattore, Vittorio; Milanese, San Donato; Mazzei, Marcello; and Notari, Bruno, 3,764,635.

Mazzochi, Roger W.; and Postlethwait, James A., to United States of America, Army. High-precision variable radio frequency coil. 3,764,947, Cl. 336-136.000.

Mc Burnett, Arthur D., to Hustler Industries, Inc. Apparatus and method for washing trucks and busses. 3,764,383, Cl. 134-6.000.

Mc Callum, Donald A., to International Harvester Company. Material spreader with rotary flail structures. 3,764,077, Cl. 239-674.000.

Mc Keen, Leighton R.: *See*—
Champney, Rodney W.; Mc Keen, Leighton R.; and Breck, Louis William Jr., 3,763,802.

McAinsh, Kenneth Gordon; Smith, Ralph David; and Lamb, Edward Lawrence. Electrically-operated display devices. 3,765,010, Cl. 340-27.0na.

McAtee, Richard M. Device for fixation of bone fractures. 3,763,855, Cl. 128-92.0bc.

McAuley, Van A. Wide band AC modulated control networks. 3,764,878, Cl. 318-632.000.

McCall Corporation: *See*—
Reyes, Zuila, 3,764,324.

McCarthy, Patrick J.: *See*—
Lukasik, John A.; and McCarthy, Patrick J., 3,764,158.

McCartney, James S., 1/2 interest to Benz, George W. Information coding system. 3,764,984, Cl. 340-168.00s.

McClellan, Ronald E., to Ultronic Systems, Inc. Data sampling apparatus. 3,764,989, Cl. 340-172.500.

McCormick & Company, Inc.: *See*—
Galetto, William G.; and Pace, Carol A., 3,764,709.

McCulloch Corporation: *See*—
Dooley, James L.; and Harasta, Clarence J., 3,763,842.

McDonald, James A.; and Ziemer, William R., to Motorola, Inc. Adaptive transistor switch. 3,764,829, Cl. 307-255.000.

McDonnell Douglas Corporation: *See*—
Schenbeck, Robert E., 3,764,095.
Waters, Elmer D., 3,763,931.

McDougall, Ian Leitch: *See*—
Barber, Anthony Clifford; and McDougall, Ian Leitch, 3,763,553.

McDow, William R., to General Motors Corporation. Method of assembling universal joint yoke and spider. 3,764,647, Cl. 264-242.000.

McDowell-Wellman Engineering Company: *See*—
Whikehart, Richard E.; and Patrick, Rudolph R., 3,763,993.

McGraw, John G.: *See*—
Pfluger, Richard T.; and McGraw, John G., 3,763,849.

McKenzie, Roy Victor William: *See*—
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McKibben, James W.: *See*—
Goodman, Brian L.; and McKibben, James W., 3,764,525.

McKinnon, Matthew C.; and MacIver, Bernard A., to General Motors Corporation. Method of making semiconductor layers on high purity alumina layers. 3,764,507, Cl. 204-192.000.

McLean, William; and Christie, Sidney A., to United States of America, Navy. Projector of acoustic energy. 3,764,965, Cl. 340-12.000.

McLeod, Murray J.: *See*—
Histed, John A.; Lawford, William H.; McLeod, Murray J.; Wendeborn, Robert G.; and Catford, Dennis R., 3,764,463.

McMaster, Leonard R.; Peterson, Sheldon T.; and Hughes, Frank M., to United States of America, National Aeronautics and Space Administration. Meteoroid detector. 3,763,691, Cl. 73-12.000.

McMullen, Edward W.: *See*—
Poplack, William J.; McMullen, Edward W.; and Basu, Hemendra, 3,764,713.

McMurtry, David Roberts. Governor assemblies. 3,763,707, Cl. 73-535.000.

McVean and Barlow, Inc.: *See*—
Edwards, Coy W.; and Laborde, Enos J., Jr., 3,764,056.

Meehanite Metal Corporation: *See*—
Moore, William H., 3,764,298.

Meise, Henry August, Jr.: *See*—
Horenkamp, John Joseph; Meise, Henry August, Jr.; and Taylor, George William, 3,764,750.

Mekata, Yoshimitsu: *See*—
Watanabe, Kiyoshi; Yano, Hirohisa; Suzuki, Kenji; Mekata, Yoshimitsu; and Kawaharada, Hajime, 3,764,474.

Melian, Cecilio. Vehicle functional status and monitor system. 3,764,974, Cl. 340-52.00f.

Melnychyn, Paul; and Stapley, Ronald B., to Carnation Company. Acylated protein for coffee whitener formulations. 3,764,711, Cl. 426-201.000.

Melvin, William J., to Collins Radio Company. Data modem apparatus. 3,764,743, Cl. 178-67.000.

Menage, Georges H., to Compagnie Francaise des Petroles. Method and apparatus for injecting fire extinguishing liquids into a fuel-carrying pipe. 3,763,936, Cl. 169-1.00a.

Menn, Julius J.: *See*—
Baker, Don R.; Menn, Julius J.; and Freiberg, Ashley H., 3,764,687.

Merkle, Eberhard, to Bleyle, Wilh., KG. Device for stopping a yarn-working machine in response to thread tension. 3,764,773, Cl. 200-61.180.

Merlat, Joanny, to Mabo, Stanley. Tape measure. 3,763,569, Cl. 33-138.000.

Merrell, Richard G., to Zenith Radio Corporation. Touch actuated transistorized AFC defeat circuit. 3,764,916, Cl. 325-417.000.

Merz, Adolf, to Merz AG Dulliken. Adjustable chucking reamer. 3,764,224, Cl. 408-231.000.

Merz AG Dulliken: *See—*
Merz, Adolf, 3,764,224.

Mesek, Frederick K.; and Repke, Virginia L., to Johnson & Johnson. Disposable diaper. 3,763,863, Cl. 128-287.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Hohchreiter, Josef, 3,764,985.

Messner, Gordon E.: *See—*
Montgomery, Robin M.; and Messner, Gordon E., 3,763,870.

Metaframe Corporation: *See—*
Willinger, Allan H.; and Dinnerstein, Albert, 3,763,997.

Metallurgical Processes Limited: *See—*
Morgan, Stephen William Kenneth, 3,764,301.

Metzenthen, William Edward; and Verhoeckx, Nicolaas Alphonsus Maria, to U.S. Philips Corporation. Device comprising a plurality of series arranged storage elements. 3,764,991, Cl. 340-172.500.

Metzsch, Clinton E.: *See—*
Papalus, John G.; and Metzsch, Clinton E., 3,764,358.

Meulnart, Andre. Removable end-piece for fishing float assembly. 3,763,590, Cl. 43-43.110.

Meyer, Andre: *See—*
Zuntini, Franco; Meyer, Andre; and Antony, Pierre, 3,764,489.

Meyer, Burton O.; and Glass, Marvin I., to Glass, Marvin, & Associates. Musical toy. 3,763,734, Cl. 84-83.000.

Meyer, Charles A., to Westinghouse Electric Corporation. Sequentially operable control valve for a steam turbine. 3,763,894, Cl. 137-630.190.

Meyer, Jarold A., to Chevron Research Company. Hydrocarbon hydroconversion process using sieve in alumina-silica magnesia matrix. 3,764,519, Cl. 208-111.000.

Meyer, Walter E., to Koehring Company. Structure for and method of pattern tracing control. 3,764,877, Cl. 318-578.000.

Meyers, Harold M: *See—*
Heard, James L.; Opittek, Eugene W.; and Meyers, Harold M, 3,765,018.

Meyers, Mary Elizabeth: *See—*
Heard, James L.; Opittek, Eugene W.; and Meyers, Harold M, 3,765,018.

Michigan Fruit Canners, Inc.: *See—*
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Michigan Technological University, Board of Control of: *See—*
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Mickelson, Thorwald J.: *See—*
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Micro Devices Corporation: *See—*
Plasko, Emil Robert, 3,764,948.

Middleton, Joan H.: *See—*
Long, Walt C.; and Middleton, Joan H., 3,764,790.

Middough, William V.; and Jaquay, Louis H., to Dravo Corporation. Vacuum furnace with an electric heater assembly. 3,764,718, Cl. 13-31.000.

Midland-Ross Corporation: *See—*
Beggs, Donald; and Scarlett, John C., 3,764,123.

Milanese, San Donato: *See—*
Fattore, Vittorio; Milanese, San Donato; Mazzei, Marcello; and Notari, Bruno, 3,764,635.

Milchem Incorporated: *See—*
Burland, Peter D.; Stephenson, James L.; and Stobart, Edward H., 3,764,530.

Milchwirlschaftliche Forschungsund Untersuchlungs GmbH: *See—*
Solms-Baruth, Hubertus Graf Zu; and Honisch, Egon, 3,763,900.

Miles, Charles C.: *See—*
Bright, Rinehart S.; and Miles, Charles C., 3,764,161.

Miles, William B. Card imprinting machine. 3,763,775, Cl. 101-233.000.

Miller, Albert: *See—*
Spiegel, William; Spiegel, Jacob; and Miller, Albert, 3,764,002.

Miller, Arthur, to Steele Classic Neckwear Corporation. Necktie bar. 3,763,496, Cl. 2-46.000.

Miller, Fred H.; and Goyette, James W., to General Motors Corporation. Engine cooling fan. 3,763,835, Cl. 123-41.110.

Miller, George T., to Hooker Chemical Corporation. Method for stimulating plant growth. 3,764,294, Cl. 71-122.000.

Miller, Harry. Remote control latch pin mechanism. 3,764,153, Cl. 279-86.000.

Miller, Herman, Inc.: *See—*
Propst, Robert L., 3,763,507.

Miller, Irene: *See—*
Galuska, Charles W., 3,763,655.

Miller, Matthew S.: *See—*
Saad, Theodore S.; and Miller, Matthew S., 3,764,770.

Miller Printing Machinery Co.: *See—*
Lenoir, Franz N.; and Van Gyseghem, Jean, 3,763,717.

Miller, William G.: *See—*
Lane, Wesley A.; Miller, William G.; and Whitney, Robert G., 3,763,679.

Milne, David Crosby, to Bell Telephone Laboratories, Incorporated. Programed-variable clock pulse generator. 3,764,992, Cl. 340-172.500.

Milprint, Inc.: *See—*
Neff, Robert O.; Morrison, Kenneth V.; and Groechel, William D., 3,764,425.

Minachev, Khabib Minachevich; Mortikov, Evgeny Sergeevich; Leontiev, Alexandr Semenovich; Masloboev-Shvedov, Alexei Alexeevich; and Kononov, Nikolai Fedorovich. Method of preparing granulated zeolite catalysts and sorbents. 3,764,563, Cl. 252-455.00a.

Minardi, Samuel C., Jr. Water conservation flush tank. 3,763,501, Cl. 4-67.00a.

Mine Safety Appliances Company: *See—*
Temple, Ernest E., 3,763,738.
Thow, David Henry, 3,764,390.

Miness, Irwin: *See—*
Horn, Edward A.; Miness, Irwin; and Rosten, Henry R., 3,763,631.

Minnesota Mining and Manufacturing Company: *See—*
Birkeland, Stephen P., 3,764,328.
Elder, James T., 3,765,007.
Krinke, Harlan L., 3,764,797.
Lee, James T., 3,764,329.
Schoon, David J., 3,763,824.
Shely, Benjamin L., 3,764,313.
Sohl, William E., 3,764,527.

Minnis, Ralph L.: *See—*
Dailey, Earl E.; Barton, Jerry M.; Minnis, Ralph L.; and Baltazzi, Evan S., 3,764,316.

Minolta Camera Kabushiki Kaisha: *See—*
Kuramoto, Yoshio; Tsujimoto, Kayoshi; and Kobori, Toshio, 3,763,755.
Nakamura, Kitamaro, 3,764,210.
Ohta, Yoshiharu, 3,764,849.

Mishcon, Lester, to Singer Company, The. Circular knitting machine with pattern wheels and adjustable cams. 3,763,667, Cl. 66-50.00a.

Mistou, Michel: *See—*
Aguadisch, Leon; and Mistou, Michel, 3,764,545.

Mitsubishi Kasei Kogyo Kabushiki Kaisha, a/k/a Mitsubishi Chemical Industries, Limited: *See—*
Yoshida, Minoru; Inoue, Minoru; and Koike, Suetoshi, 3,764,482.

Mitsubishi Mining & Cement Company, Ltd.: *See—*
Tachibana, Kan-Ichi; and Nishioka, Michihiro, 3,764,951.

Mitsubishi Paper Mills, Ltd.: *See—*
Ohyzma, Yasushi; and Miyazawa, Sadayuki, 3,764,331.

Mitsui, Isamu: *See—*
Inagami, Kaoru; Mitsui, Isamu; and Kando, Hiroaki, 3,764,710.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Ozawa, Tokuji; Ueda, Mikio; Hashimoto, Ryosuke; and Suzuki, Shigenori, 3,764,634.

Mitsushita Electronics Corporation: *See—*
Okumura, Tomisaburo; Tsuchitani, Akira; and Hasegawa, Toshio, 3,764,864.

Mittendorf, Theodor H. Adjustable pillow apparatus. 3,763,509, Cl. 5-341.000.

Mix, Renard E., to General Motors Corporation. Casting plate straps to battery plates and a lead-acid storage battery utilizing same. 3,764,386, Cl. 136-26.000.

Miyamoto, Fumio. Apparatus for producing light structural board of thermoplastic resin. 3,764,245, Cl. 425-131.000.

Miyamoto, Sho; Kurihara, Sachihiko; and Nishikawa, Shinichi, to Japan Maize Products Co., Ltd. Process of deinking waste paper materials. 3,764,460, Cl. 162-5.000.

Miyasawa, Nobuo: *See—*
Inoue, Isao; Sekine, Susumu; Hirose, Takeshi; Matsumoto, Kenichi; and Miyasawa, Nobuo, 3,764,047.

Miyazawa, Sadayuki: *See—*
Ohyzma, Yasushi; and Miyazawa, Sadayuki, 3,764,331.

Miyoshi, Katsuyoshi; Iwasaki, Yoichi; Hotta, Yunichi; and Fujii, Masaki, to Toho Titanium Company Limited. Process for polymerization of α-olefin. 3,764,591, Cl. 260-88.20r.

Mizumoto, Yoshiro, to Alps Motorola, Inc. Circuit bilaterally employable in cartridge type tape recorder for two channel and four channel operations. 3,764,754, Cl. 179-100.2ca.

Mizuno, Hideaki; and Akiyama, Naoki, to Victor Company of Japan, Ltd. Television picture tube having an electron scattering prevention film. 3,764,367, Cl. 117-33.50c.

Mizuno, William G.; Brunelle, Thomas E.; Rue, Larry M.; and Crecelius, Samuel B., to Economics Laboratory, Inc. Detergent compositions. 3,764,559, Cl. 252-99.000.

Mi² Inc.: *See—*
Spademan, Charles F.; and Marsalka, Joseph P., 3,764,986.

Mlot-Fijalkowski, Adolf. Method for the removal of penetrants in a closed system. 3,764,265, Cl. 23-230.00r.

Mlynarczyh, Joseph E., to General Motors Corporation. Spring handling apparatus. 3,764,107, Cl. 254-10.500.

Mo Och Domajo AB: *See—*
Samuelson, Hans Olof, 3,764,464.

Mo och Domsjo Aktiebolag: *See—*
Hultman, Bengt; and Norgren, Erik Borje William, 3,764,496.

Mobus, Gunter; and Sohnchen, Ernst, to Vaillant, Joh., KG. Gas control system with thermoelectric ignition safety device. 3,763,875, Cl. 137-66.000.

Modine Manufacturing Company: *See—*
Frost, Donald J., 3,763,930.

Moelanis, Felix Jan: *See*—
Depoubier, Henri; and Moelanis, Felix Jan, 3,764,317.
Moelants, Felix Jan: *See*—
Depoorter, Henri; and Moelants, Felix Jan, 3,764,338.
Moffett, Graham Douglas: *See*—
Perry, Ian James; Watson, Bruce Dunstan; Lagerche, John Geoffrey; Denman, George Alan; Irvine, Norman William; Goding, Thomas Joseph; and Moffett, Graham Douglas, 3,763,915.
Mogi, Koya: *See*—
Aonuma, Tatsuo; Yasuda, Atsushi; Yuasa, Toshizumi; Arai, Akira; Mogi, Koya; and Yokotsuka, Tamotsu, 3,764,708.
Mohr, John, & Sons: *See*—
Tokarz, Leo T., 3,764,027.
Mojden, Wallace W., to Fleetwood Systems, Inc. Automatic vertical feeding machine for vertical stacking of carton blanks or the like. 3,764,024, Cl. 214-6.0ds.
Molho, Darius: *See*—
Boschetti, Eugene; Molho, Darius; and Fontaine, Louis, 3,764,693.
Moll, Franz: *See*—
Himmelmann, Wolfgang; Von Konig, Anita; Moll, Franz; Rocker, Dietrich; and Saleck, Wilhelm, 3,764,339.
Mollet, Adrianus Josephus Theresia: *See*—
Ridders, Johannes Antonius Maria; Mollet, Adrianus Josephus Theresia; and Termuelen, Arend Jan, 3,764,842.
Monacelli, Umberto. Tack driving device. 3,764,054, Cl. 227-114.000.
Mondo Kabushiki Kaisha: *See*—
Tsukagushi, Tsunehiro, 3,764,084.
Monsanto Company: *See*—
Baizer, Manuel M.; and Wagenknecht, John H., 3,764,492.
Bowers, Clarence A.; Kimbrell, James P.; and Williamson, James R., 3,764,264.
Chupp, John Paul, 3,764,695.
Partos, Richard D., 3,764,698.
Montag, Margaret J.: *See*—
Ropiequet, Richard L.; and Montag, Margaret J., 3,764,453.
Montagne, Jean Bernard, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Tire tread with protruding elements between adjacent ribs. 3,763,911, Cl. 152-209.000.
Montecatini Edison S.p.A.: *See*—
Thring, Meredith Wooldrige; Cadorin, Dante; and Ducato, Aldo, 3,764,667.
Montgomery Elevator Company: *See*—
Drexler, John J., 3,764,904.
Montgomery, Frederick Dorsey: *See*—
Norin, Allan A., 3,763,768.
Montgomery, Robin M.; and Messner, Gordon E., to Max Factor & Co. Apparatus and method for applying cosmetics. 3,763,870, Cl. 132-85.000.
Mookherjee, Braja O.; and Blets, Moos G. J., to International Flavors & Fragrances Inc. Flavoring process using oxycyclic pyrazines. 3,764,349, Cl. 426-65.000.
Moore Business Forms, Inc.: *See*—
Hulbert, Allison G., 3,764,061.
Moore, Earl P., Jr., to Du Pont de Nemours, E. I., and Company. Stabilization of positive sol-refractory grain slurries. 3,764,355, Cl. 106-57.000.
Moore, Richard D.: *See*—
Ayling, John; and Moore, Richard D., 3,764,833.
Moore, William H., to Meehanite Metal Corporation. Method of melting cast iron. 3,764,298, Cl. 75-12.000.
Moorefield, Samuel A.: *See*—
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Morawetz, Peter L.: *See*—
Tinklenberg, Meryl W.; Morawetz, Peter L.; and Olson, Roger, 3,764,486.
Morehouse, John D.: *See*—
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Morehouse, John H.; and Morehouse, John D. Spray tank. 3,764,072, Cl. 239-286.000.
Morgan Construction Company: *See*—
Alexander, Frank A., Jr., 3,764,259.
Morgan, Kenneth A., to Universal Oil Products Company. Solvent extraction of germanium from alum solution. 3,764,652, Cl. 423-89.000.
Morgan, Norman D.: *See*—
Costa, Robert B.; Wichman, William J.; and Morgan, Norman D., 3,764,073.
Morgan, Robert E.; and Palma, James D., to General Motors Corporation. Rotary engine oil metering pump. 3,764,234, Cl. 418-84.000.
Morgan, Stephen William Kenneth, to Metallurgical Processes Limited and Imperial Smelting Corporation, (N.S.C.) Limited. Operation of a blast furnace. 3,764,301, Cl. 75-87.000.
Morganite Incorporated: *See*—
Respess, John H., 3,763,556.
Mori, Yasuki: *See*—
Mukoh, Akio; Mori, Yasuki; Sakashita, Kiyoshi; Nozaki, Sukekatsu; and Hagitani, Akira, 3,764,590.
Moriya, Nobuyoshi, to Mansei Kogyo Kabushiki Kaisha. Piezoelectric gas lighter. 3,764,256, Cl. 431-255.000.
Morrison, Kenneth V.: *See*—
Neff, Robert O.; Morrison, Kenneth V.; and Groechel, William D., 3,764,425.
Morse, John Edwin; and James, Claire Llewellyn, to Eastman Kodak Company. Display system capable of selective annotation. 3,764,211, Cl. 355-71.000.
Mort, Joseph; Sharp. James H.; Bean, Lloyd F.; Chen, Inan; and Emerald, Robert L., to Xerox Corporation. Ambipolar electrophotographic plate. 3,764,315, Cl. 96-1.500.
Mortikov, Evgeny Sergeevich: *See*—
Minachev, Khabib Minachevich; Mortikov, Evgeny Sergeevich; Leontiev, Alexandr Semenovich; Masloboev-Shvedov, Alexei Alexeevich; and Kononov, Nikolai Fedorovich, 3,764,563.
Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, to Cableform Limited. Control systems for battery operated vehicles. 3,764,870, Cl. 318-139.000.
Morton-Norwich Products, Inc.: *See*—
Turner, Robert J.; Booth, David L.; and Berry, Richard D., 3,764,273.
Mosch, Alfred. Warning device. 3,763,585, Cl. 40-129.00c.
Moschovis, Elias P.: *See*—
Strem, Joseph G.; Juskey, John S.; and Moschovis, Elias P., 3,764,323.
Moser, Kuno, GmbH, Firma: *See*—
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Moser Stahlbau KG: *See*—
Wagner, Matthias, 3,764,080.
Mosher Safe Company, The: *See*—
Wetz, Leonard R., Jr., 3,763,795.
Moss, Theron V. Mop swab and method of producing the same. 3,763,517, Cl. 15-229.00r.
Mostosi, Angelo, to S.A.C.E. S.p.A. Construzioni Elettromeccaniche. Current-limiting electric switch. 3,764,946, Cl. 335-195.000.
Motoren- und Turbinen-Union Munchen GmbH: *See*—
Prostler, Wolfgang; Ferschin, Peter; and Lechner, Karl, 3,764,189.
Motorola, Inc.: *See*—
Abraham, Richard H.; and Kowalewski, Rolf E., 3,764,912.
Hays, Robert G., 3,764,410.
Maynard, Fred B., 3,764,721.
McDonald, James A.; and Ziemer, William R., 3,764,829.
Parker, Norman W., 3,764,731.
Spanjer, Keith G., 3,763,545.
Mott, James D., to Hydrill Company, mesne. Retrievable safety valve. 3,763,933, Cl. 166-224.00a.
Moulton, Marc L.: *See*—
Woodworth, William; Moulton, Marc L.; and Whittington, James H., 3,764,923.
Mueller, Francis X., Jr.: *See*—
Hsieh, Henry L.; Mueller, Francis X., Jr.; and Busler, William R., 3,764,639.
Muggenborg, Stanley D.: *See*—
Crouch, George D.; and Muggenborg, Stanley D., 3,763,623.
Mukoh, Akio; Mori, Yasuki; Sakashita, Kiyoshi; Nozaki, Sukekatsu; and Hagitani, Akira, to Hitachi, Ltd. Organic photoconductive materials. 3,764,590, Cl. 260-85.50r.
Mulfinger, Eckhard: *See*—
Schroter, Carl; and Mulfinger, Eckhard, 3,764,440.
Mulholland, Lawrence K. Neck rest and shoulder support structure for physically handicapped patients. 3,764,180, Cl. 297-400.000.
Mullaney, John J., to Sealol, Inc. Rotary mechanical fluid seal. 3,764,148, Cl. 277-40.000.
Muller, Hans. Process for the prevention of explosions in fermentation reactions involving burnable components. 3,764,481, Cl. 195-109.000.
Muller, Harro. Electronic switch actuated by proximity of the human body. 3,764,819, Cl. 307-116.000.
Muller, Richard: *See*—
Kramer, Heinrich; Butz, Josef; Muller, Richard; Thoma, Ludwig; Pollmann, Johann; Zielbauer, Hans; and Bernklau, Xaver, 3,764,431.
Muller, Wolfgang; and Dathe, Joachim, to Siemens Aktiengesellschaft. Method of doping a silicon crystal by indiffusing boron or phosphorus from a layer produced on the silicon surface. 3,764,412, Cl. 148-188.000.
Mulvany, Dale B., to Watteredge-Uniflex, Inc. Electric cable with controlled flexibility. 3,764,724, Cl. 174-15.00c.
Munk, Edmund E., to Furnier- und Sperrholzwerk T.F. Werz, Jr. K.G. Method of molding coated articles of fibrous materials. 3,764,645, Cl. 264-112.000.
Murakami, Yoshio, to Tokyo Shibaura Electric Co., Ltd. Pump for producing a vacuum free of hydrogen. 3,764,266, Cl. 23-252.00r.
Muraki, Kiichi: *See*—
Yoda, Tadashi; Muraki, Kiichi; and Kishitani, Masatoshi, 3,763,953.
Muramatu, Akira; and Ichihara, Tatsuro, to Omron Tateisi Electronics Co. Traffic signal control device. 3,764,973, Cl. 340-40.000.
Murata, Yoshiro: *See*—
Suda, Hideaki; Kanda, Tatsuo; Murata, Yoshiro; Hida, Hiromu; and Kubo, Toshio, 3,764,664.
Murib, Jawad H., to National Distillers and Chemical Corporation. Preparation of aluminum hydride. 3,764,666, Cl. 423-645.000.
Murphy, Richard D.: *See*—
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Murphy, William D.: *See*—
Fischman, Martin; and Murphy, William D., 3,764,737.

Murray, Joseph John, to Potter Instrument Company, Inc. Magnetic head assembly with irregularly shaped aperture structure. 3,764,756, Cl. 179-100.20c.

Mursinna, Richard C.: *See—*
Dale, Alan M.; Martindale, David L.; and Mursinna, Richard C., 3,764,036.

Musgrave, Daniel D. Method of fabricating barbed tape. 3,763,529, Cl. 29-7.100.

Muta, Akinori; and Tsukuda, Yasuo, to Hitachi, Ltd. Method for sintering very pure yttria compacts to transparency. 3,764,643, Cl. 264-65.000.

Mutt, James D., to Hydril Company. Method and apparatus for automatic mud diverter valve. 3,763,940, Cl. 175-65.000.

Mutter, William H.: *See—*
Strauss, Albert B.; and Mutter, William H., 3,763,985.

Myers, Gerald D.: *See—*
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Nabisco, Inc.: *See—*
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Nachua Corporation: *See—*
LeClair, Albert W.; and Benbrook, Charles H., 3,764,333.

Nagae, Tadashi; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 3,764,327, Cl. 96-55.000.

Naganuma, Susumu: *See—*
Hachiya, Takeo; Naganuma, Susumu; and Umino, Tomotaka, 3,764,231.

Nagata, Minoru: *See—*
Nomura, Masayoshi; Nagata, Minoru; and Saida, Hiroji, 3,764,409.

Nagel, Manfred; and Seuss, Rainer, to Akzona Incorporated. Production of a composite thread. 3,763,640, Cl. 57-34.0hs.

Nagel, Raymond; Wharton, Norman; and Cockburn, Thomas, to Hatchway Dynamics Limited. Ships hatches. 3,763,814, Cl. 114-202.000.

Nakada, Kyohei: *See—*
Yamada, Hisayoshi; Nakada, Kyohei; and Seta, Yukio, 3,764,088.

Nakajima, Hisao; Suzuki, Takashi; and Hokawa, Takuya, to Hitachi, Ltd. and Japanese National Railways. Billing system in mobile communication. 3,764,747, Cl. 179-7.00r.

Nakajima, Yasuo, to Hitachi, Ltd. Mass spectrometer. 3,764,803, Cl. 250-299.000.

Nakamura, Kiromichi; and Baba, Kosaku, to Nissan Motor Company, Limited. Vehicle speed detector for use with skid control systems. 3,764,817, Cl. 307-10.00r.

Nakamura, Kitamaro, to Minolta Camera Kabushiki Kaisha. A lighting system for a halogen lamp in a duplicating machine. 3,764,210, Cl. 355-69.000.

Nakamura, Tsutomu: *See—*
Kiyasu, Zenichi; and Nakamura, Tsutomu, 3,764,812.

Nakamura, Yasushi; Kimura, Michio; Suzuki, Yoshio; Hamma, Noritaka; Fukumaru, Toshitsugu; Aono, Shunji; and Fukushima, Hideaki, to Sumitomo Chemical Company, Ltd. Amide derivatives having antiatherosclerosis action. 3,764,704, Cl. 424-324.000.

Nakatani, Atsutada: *See—*
Hayami, Tadao; Nakatani, Atsutada; and Shimuzu, Munetaka, 3,763,757.

Nakayama, Kiyoshi. Process for production 1-β-D-ribofuranoside-5' phosphoric acid esters of 1H-pyrazolo (3,4-δ) pyrimidines. 3,764,472, Cl. 195-28.00n.

Nalco Chemical Company: *See—*
Allain, Ronald J.; and Braithwaite, David G., 3,764,494.

Napoli, Louis Sebastian; and Reichert, Walter Francis, to RCA Corporation. Semiconductor devices and methods of making the same. 3,764,865, Cl. 317-235.00r.

Nara, Akinao, to Hitachi, Ltd. Automatic control system for hot-strip mill and the like. 3,764,789, Cl. 235-151.100.

Nascher, Reinold: *See—*
Schmid, Eduard; Bruttel, Beat; Nascher, Reinold; and Egli, Rene, 3,764,007.

Natali, Remigio; and Giombini, Guiseppe, to Colgate-Palmolive Company. Enzyme granulation process. 3,764,542, Cl. 252-135.000.

National Cash Register Company, The: *See—*
Houver, Troy E.; and Wright, Arthur J., 3,764,369.
Janning, John L., 3,764,429.

National Distillers and Chemical Corporation: *See—*
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National Research Development Corporation: *See—*
James, Alec Patrick, 3,763,983.
Watt, John G., 3,764,009.

Navasero, Nestor C., to United States of America, Agriculture. Row seeder. 3,763,797, Cl. 111-77.000.

Neal, Eric R., to Coventry Climax Engines Limited. Manifold vacuum control for power brakes. 3,763,974, Cl. 192-3.00r.

Nedosekov, Svyatoslav Semenovich: *See—*
Poltorak, Alexandr Pavlovich; Nedosekov, Svyatoslav Semenovich; Sameljuk, Jury Fedorovich; Vorontsov, Oleg Mikhailovich; and Sashkin, Nikolai Nikitovich, 3,764,761.

Neely, James E., Jr., to PPG Industries, Inc. Tempering. 3,764,403, Cl. 148-13.100.

Neff, Robert O.; Morrison, Kenneth V.; and Groechel, William D., to Milprint, Inc. Apparatus and method for the manufacture of tubular containers. 3,764,425, Cl. 156-69.000.

Nehrenberg, Alvin E.; and Rundell, Gene R., to Wallace-Murray Corporation. Carburization and oxidation resistant alloy. 3,764,304, Cl. 75-128.00c.

Nell, William C., to C.M.H., Inc. Tieback apparatus. 3,763,617, Cl. 52-651.000.

Nelson, Eldrid W.: *See—*
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., 3,763,789.

Nelson, Norvell J., to Eastman Kodak Company. Image-forming compositions including an azide and transistion metal complexes of triorganophosphines. 3,764,335, Cl. 96-91.00d.

Nelson, Richard L.; and Nelson, Walter P. Apparatus and method for making filled food item. 3,763,765, Cl. 99-450.700.

Nelson, Simon P.: *See—*
Sewell, Richard B. H.; and Nelson, Simon P., 3,764,016.

Nelson, Walter P.: *See—*
Nelson, Richard L.; and Nelson, Walter P., 3,763,765.

Nepper, John P.; Lane, Joseph J.; and Skuja, Juris, to Arctic Enterprises, Inc. Mounting device for securing a handle to a lawn mower. 3,764,156, Cl. 280-47.370.

Ness, Klaus J.: *See—*
Trowbridge, Bruce D.; and Ness, Klaus J., 3,764,194.

Neudecker, Karl, to Agfa-Gevaert Aktiengesellschaft. Adjustable rotary shutter for motion picture cameras. 3,764,199, Cl. 350-272.000.

Neugebauer, Heinz, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Hydrostatic lubricating device for the meshing points of cylinder worms and a worm rack. 3,763,959, Cl. 184-6.120.

Neumann, Robert M.: *See—*
Horn, Werner G.; and Neumann, Robert M., 3,764,308.

Neumeier, Leander A.; and Risbeck, John S., to United States of America, Interior. Creep-resistant, high-strength Zn-Al and Zn-Al-Mg alloys. 3,764,402, Cl. 148-12.700.

New Zealand Dairy Research Institute: *See—*
Bysouth, Raymond; and Robertson, Peter Struan, 3,763,769.

Newkirk, Roy K. Mechanical seal for a rotating shaft. 3,764,150, Cl. 277-90.000.

Newton, Alan Branford; Rose, John Brewster; and Leslie, Victor Jeffrey, to Imperial Chemical Industries Limited. Aromatic polymers of halophenols or halothiophenols. 3,764,583, Cl. 260-49.000.

Newton, Charles L.: *See—*
Gaumer, Lee S., Jr.; and Newton, Charles L., 3,763,658.

Newton, William J.: *See—*
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Nichols, Duane C., to Whirlpool Corporation. Twist tray ice maker. 3,763,662, Cl. 62-353.000.

Nick, Howard H., to International Business Machines Corporation. Stripline directional couplings device. 3,764,941, Cl. 333-10.000.

Nickerson, John D.: *See—*
Darwin, Charles D.; Nickerson, John D.; Parsons, James E.; and Wiesboeck, Robert A., 3,764,658.

Nicks, Larry J.; Lei, Kenneth P. V.; and Sullivan, Thomas A., to United States of America, Interior. Recovery of nickel and cobalt. 3,764,493, Cl. 204-64.00r.

Nieberding, Henri; and Van Den Bergen, Edgard, to S.A. Bekaert-Cockerill. Method for manufacturing metallic wool. 3,763,528, Cl. 29-4.500.

Niebrzydoski, John L., to ACF Industries Incorporated. Staged accelerator pump for two-stage carburetor. 3,764,119, Cl. 261-23.00a.

Nielsen, Jorgen F., to GTI Corporation. Wire bonder. 3,764,055, Cl. 228-3.000.

Nienhuis, Harry: *See—*
Van Euji, Antonie Peter Lambertus; Jack, Alexander Gray; and Nienhuis, Harry, 3,764,843.

Nilsson, Jan Ingemar, to Sprinter Pack AG. Glue applicator. 3,763,823, Cl. 118-258.000.

Nimerick, Kenneth H.: *See—*
Coulter, Albert W., Jr.; Gibson, Daniel L.; and Nimerick, Kenneth H., 3,763,934.

Ninagawa, Chikayoshi; Ashizaki, Shigeya; and Okamoto, Masahiro, to Matsushita Electronics Corporation. Method and apparatus for making color cathode ray tube. 3,764,366, Cl. 117-33.5cm.

Nippon Electric Company, Limited: *See—*
Kakizaki, Katsunobu; Kurakami, Osamu; and Inoue, Yasukuzo, 3,764,413.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kayaku Kabushiki Kaisha: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Wenzel, Werner; and Chaussy, Leon, 3,764,300.

Nippon Steel Corporation: *See—*
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Nisbet, John L.; and Woodall, Hubert C., Jr., to Carolina Narrow Fabric Company. Glass pile fabric and method of making same. 3,764,448, Cl. 161-67.000.

Nishihara, Toshiro; Asano, Hidejiro; Maeda, Shigeyoshi; and Oyagi, Yashichi, to Nippon Steel Corporation. Method for producing steel sheets having resistance against rust formation. 3,764,398, Cl. 148-6.14r.

Nishikawa, Shinichi: *See*—
Miyamoto, Sho; Kurihara, Sachihiko; and Nishikawa, Shinichi, 3,764,460.
Nishino, Hiroshi; Kubo, Hakaru; and Ichikawa, Hirohiko, to Takeda Chemical Industries, Ltd. Activated carbon from admixture of coking coal and inorganic potassium salts. 3,764,561, Cl. 252-447.000.
Nishioka, Michihiro: *See*—
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Nissan Motor Company, Limited: *See*—
Aono, Shigeo; Usux, Saburo; and Manaka, Nobuji, 3,763,720.
Nakamura, Kiromichi; and Baba, Kosaku, 3,764,817.
Tsuda, Yasuhisa, 3,763,762.
Nittei, Fritz; and Lohmer, Karl, to Agfa-Gevaert Aktiengesellschaft. Incorporating process for introducing additives into photographic layers. 3,764,336, Cl. 96-100.000.
NL Industries, Inc.: *See*—
Gallagher, Peter Christopher John, 3,763,535.
Noll, Hans, to Searle, G. D., & Co. Microdispensing process and apparatus. 3,764,041, Cl. 222-1.000.
Noll, Stanley Darwin; and Delfeld, William F., to Production Experts, Inc. Downcoiler mandrel of the toggle link type for hot strip mills. 3,763,684, Cl. 72-148.000.
Noly, Jean. Electro-magnetic braking device. 3,763,968, Cl. 188-171.000.
Nomura, Masayoshi; Nagata, Minoru; and Saida, Hiroji, to Hitachi, Ltd. Method for fabricating a semiconductor component for a semiconductor circuit. 3,764,409, Cl. 148-175.000.
Nord, Eric T.: *See*—
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Scarbrough, Don R.; and Wilhelm, Frederick R., 3,764,069.
Norden, Alexander R., to General Switch Company. Electric meter socket. 3,764,956, Cl. 339-74.00r.
Nordskog, Robert A. Power boat racing helmet. 3,763,494, Cl. 2-3.00r.
Nordson Corporation: *See*—
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Scarbrough, Don R.; and Wilhelm, Frederick R., 3,764,069.
Norgren, Erik Borje William: *See*—
Hultman, Bengt; and Norgren, Erik Borje William, 3,764,496.
Norin, Allan A., to Montgomery, Frederick Dorsey. Automatic food warmer. 3,763,768, Cl. 99-483.000.
Norman, Reta R., 20% to Lee, Raymond, Organization, Inc., The. Automobile cover. 3,763,908, Cl. 150-52.00k.
Norprint Limited: *See*—
Duff, Geoffrey E., 3,764,447.
North American Rockwell Corporation: *See*—
Dentino, Mauro Joseph, 3,765,017.
Hrusovsky, Louis J., 3,764,401.
Oldham, Keith B., 3,764,269.
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Notari, Bruno: *See*—
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Novar Electronics Corporation: *See*—
Stettner, Joseph C., 3,764,832.
Nowell, John R., to Honeywell Information Systems, Inc. Sequencer for a dual switching regulator. 3,764,889, Cl. 323-17.000.
Nozaki, Sukekatsu: *See*—
Mukoh, Akio; Mori, Yasuki; Sakashita, Kiyoshi; Nozaki, Sukekatsu; and Hagitani, Akira, 3,764,590.
Nozick, Peter; and Tatter, Charles W., to Beatrice Foods Co. Spray dried essential oil composition. 3,764,346, Cl. 426-213.000.
Nuckols, Phillip H., to Abbott, Paul, Co., Inc. Auxiliary tool bar lift mechanism. 3,763,937, Cl. 172-311.000.
Numoto, Yasumasa; and Itaya, Kyuhei, to Sumitomo Metal Industries, Limited. Apparatus for correcting strains in stamp-forgings. 3,763,687, Cl. 72-392.000.
Nurse, Howard L.: *See*—
Simons, Brent S.; and Nurse, Howard L., 3,764,999.
Nutrionics Machine Corporation: *See*—
Driggs, Leslie W., 3,764,714.
N.V. Koniklijke Pharmaceutische Fabrieken v/h Brocades-Stheeman & Pharmacia: *See*—
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Bert, Paul A.; Jedynak, Leo; and Guif, Stanley E., 3,765,016.
Ford, Frederick M.; and Harvey, Robert L., 3,763,713.
Oakes, James A., to General Motors Corporation. Geometry for a PNP silicon transistor with overlay contacts. 3,763,550, Cl. 29-578.000.
Oaks, Seibert S.: *See*—
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Obermeier, Albert Anthony: *See*—
Treichel, Richard; Obermeier, Albert Anthony; and Schuck, Paul Robert, 3,764,183.
Obuchi, Kazuo, to Fuji Photo Film Co., Ltd. Process utilizing single charging means for effecting simultaneous functions of charging and facilitating toner image transfer. 3,764,207, Cl. 355-3.000.
O'Callaghan, Gerald F., to Eaton Corporation. Synchronizing plural motor control system for machines. 3,764,868, Cl. 318-85.000.
Ocean Labs Inc.: *See*—
Carbonniere, John G., 3,764,341.
Ochel, Gunter; and Schroder, Jurgen, to U.S. Philips Corporation. Digital synchronous FM-modem. 3,764,913, Cl. 325-30.000.
Ocker, Herbert, to Werner & Pfleiderer. Process for continuously producing soap and device for carrying out the process. 3,764,114, Cl. 259-6.000.
Odagiri, Yoichi, to Sony Corporation. Magnetic recording and/or reproducing apparatus with transducer extending through a record support plate having an annular groove. 3,764,758, Cl. 179-100.20p.
Office de Radiodiffusion-Television Francaise: *See*—
Macheboeuf, Guy R., 3,764,732.
Ogawa, Shigeru: *See*—
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Kampher, Helmut; Gotze, Johannes; Von Konig, Anita; and Ohlschlager, Hans, 3,764,322.
Ohta, Yoshiharu, to Minolta Camera Kabushiki Kaisha. Electronic flash charging and triggering circuitry. 3,764,849, Cl. 315-241.00p.
Ohyzma, Yasushi; and Miyazawa, Sadayuki, to Mitsubishi Paper Mills, Ltd. Color photographic material. 3,764,331, Cl. 96-73.000.
Oishi, Yasushi: *See*—
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Okada, Takashi, to Sony Corporation. Transistor circuit for color television receiver. 3,764,826, Cl. 307-235.00r.
Okamoto, Masahiro: *See*—
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Okiyama, Masaharu. Seat lifting device for use in barbers or beauty parlors and medical facilities. 3,763,651, Cl. 60-477.000.
Okubo, Katsuhiro; and Ueno, Atsuyuki. Process for removal of contaminants from wastes. 3,764,499, Cl. 204-151.000.
Okubo, Kazuo; Ueho, Hiroshi; Sasaya, Minoru; Toyama, Takashi; and Tsurumaru, Michiko, to Toyo Seikan Kaisha Limited. Tubular metal can body. 3,763,895, Cl. 138-170.000.
Okumura, Tomisaburo; Tsuchitani, Akira; and Hasegawa, Toshio, to Mitsushita Electronics Corporation. Insulated-gate field-effect transistor with punch-through effect element. 3,764,864, Cl. 317-235.00r.
Olah, Emmerich I., to Interlake, Inc. Material transfer mechanism. 3,764,026, Cl. 214-35.00r.
Olano, Francisco Omar; Fordy, James Keith; deceased (by Fordy, Audrey Jean; executrix); and Martel, Louis William, said Olano and said Martel assors. to International Nickel Company, Inc., The. Side burner for rotating vessels. 3,764,257, Cl. 432-19.000.
Olashaw, William Francis, to General Electric Company. Heat dissipation means for electric devices mounted in switchboards (especially circuit breakers). 3,764,765, Cl. 200-166.00k.
Oldham, Keith B., to North American Rockwell Corporation. Sensor for fluid components. 3,764,269, Cl. 23-254.00e.
Olin Corporation: *See*—
Besel, Fred A.; and Setzer, William C., 3,763,686.
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Caule, Elmer J., 3,764,400.
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Oliver, Theodore A.: *See*—
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Oliverio, George A. Safety lock for a stove. 3,764,103, Cl. 251-292.000.
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., to Olson, Chas, & Sons Incorporated. Convertible rail-highway vehicle. 3,763,789, Cl. 105-215.00c.
Olson, Chas, & Sons Incorporated: *See*—
Olson, Buford W., Sr.; Nelson, Eldrid W.; and Davidson, Albin A., 3,763,789.
Olson, Jan B., to Sierracin Corporation, The. Interlayer stress reduction in laminated transparencies. 3,764,445, Cl. 161-4.000.
Olson, Rich L. Motor control for irrigation apparatus. 3,764,852, Cl. 317-13.00a.
Olson, Roger: *See*—
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O'Meara, Thomas R., to Hughes Aircraft Company. Return-wave phase controlled adaptive array. 3,764,213, Cl. 356-5.000.
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Muramatu, Akira; and Ichihara, Tatsuro, 3,764,973.
Onishi, Yoshihiro, to Hitachi, Ltd. Instruction processing device using advanced control system. 3,764,988, Cl. 340-172.500.
Opittek, Eugene W.: *See*—
Heard, James L.; Opittek, Eugene W.; and Meyers, Harold M, 3,765,018.
Oprins, Johannes A. E., to Ideal Industries, Inc. Wire stripper. 3,763,723, Cl. 81-9.50a.
Opti-Holding AG: *See*—
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Optical and Electronic Research, Inc.: *See*—
Bley, Frederick O., 3,764,441.

Optical Recognition Systems, Inc.: *See—*
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Oriard, Marcel H.: *See—*
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Orlandi, John F., to Belden Corporation. Wire twisting device. 3,763,899, Cl. 140-149.000.
Orlando, Charles M.; Emerick, Carl M.; and Jerussi, Robert A., to General Electric Company. Polyurethane wire coating method. 3,764,375, Cl. 117-128.400.
Orlando, Vincent A., to General Motors Corporation. Automatic choke control. 3,763,837, Cl. 123-119.00f.
Ornsteen Chemicals and Textiles Co., Inc.: *See—*
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Ornsteen, Robert L., to Ornsteen Chemicals and Textiles Co., Inc. Hot melt adhesive gun. 3,764,045, Cl. 222-146.0he.
Orr, Bobby J.; Danner, Bill A.; and Parks, Roby A., to Allis-Chalmers Corporation. Shock mounted track carrier roller. 3,764,184, Cl. 305-25.000.
Orris, Stephen J., to Chrysler Corporation. Electronic seat sensing switch. 3,764,861, Cl. 317-146.000.
Orser, David A., to General Electric Company. Light-modulating medium for image projection apparatus. 3,764,549, Cl. 252-300.000.
Orszlan, Andrew: *See—*
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Orthman, William Herman. Manually operable mortar spreader for brick layers. 3,764,222, Cl. 401-261.000.
Ortho Pharmaceutical Corporation: *See—*
Karmas, George, 3,764,613.
Ortman, Gaylord; and Vanderford, Kenneth J. Motorcycle towing apparatus. 3,764,163, Cl. 280-292.000.
Oshima, Keiji; Ito, Yozo; and Suzuki, Setsuo, to Sumitomo Bakelite Company, Limited. Method of foaming fibrous fleece. 3,764,428, Cl. 156-78.000.
Ostapko, Daniel L.: *See—*
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O'Sullivan, David D.: *See—*
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Ott, Clara A.: *See—*
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Ott, Hans, to Sandoz-Wander, Inc. 1-Substituted-quinazoline-2(1H)-thiones. 3,764,600, Cl. 260-251.qb.
Ott, Thurman A.; and Ott, Clara A., 20% to Lee, Raymond, Organization, Inc., The. Perf-a-board roller type tool. 3,763,563, Cl. 30-365.000.
Ouchterlony, Guy David. Funnels. 3,763,903, Cl. 141-201.000.
Ouska, Ralph C. Article roll-over device. 3,763,990, Cl. 198-33.0ad.
Outboard Marine Corporation: *See—*
Griffith, Michael J., 3,764,240.
Overhead Door Corporation: *See—*
Harris, Donald S., 3,764,875.
Owens, Dewey E. Sewage treatment apparatus. 3,764,011, Cl. 210-195.000.
Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E.; and Taylor, Everett W., 3,763,526.
Gambill, Ulysses T.; and Brock, Gregory C., Jr., 3,764,243.
Marzochi, Alfred, 3,764,452.
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Brymer, Andrew Ellsworth, Jr., 3,764,289.
Di Frank, Frank J., 3,763,537.
Hagedorn, Erwin C., 3,764,283.
Simmons, George A., 3,764,444.
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Oxy Metal Finishing Corporation: *See—*
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Oy Nokia AB: *See—*
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Oyagi, Yashichi: *See—*
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Ozawa, Tokuji; Ueda, Mikio; Hashimoto, Ryosuke; and Suzuki, Shigenori, to Mitsui Shipbuilding and Engineering Co., Ltd. Process and apparatus for preparing lower olefins. 3,764,634, Cl. 260-683.00r.
Paananen, Eugene E.; Csengery, Ladislao C.; and Barry, Richard J., to Burroughs Corporation. Magnetic tape drive. 3,764,087, Cl. 242-186.000.
Pace, Carol A.: *See—*
Galetto, William G.; and Pace, Carol A., 3,764,709.
Pacific Engineering & Production Company of Nevada: *See—*
Gibson, Fred D., Jr.; Rhees, Raymond C.; Gibson, James I.; and Halker, Bruce B., 3,764,500.
Padgett, Richard A., to GTE Automatic Laboratories, Incorporated. Method and apparatus for synchronizing the operation of trunk scanners. 3,764,751, Cl. 179-18.0eg.
Paice, Derek A.: *See—*
Hicks, John M.; and Paice, Derek A., 3,764,851.
Paivinen, John O.; Rubinstein, Richard B.; Cohen, Leo; and Baker, Lamar T., to General Instrument Corporation. Read-write random access memory system having single device memory cells with data refresh. 3,765,003, Cl. 340-173.0ca.
Pajak, Wiaold, to Auto Comp Devices, Inc. Aerosol can adapter. 3,764,044, Cl. 222-70.000.
Pakter, David L.; and Krauss, Thomas R. Timepiece for creating visual effects. 3,763,648, Cl. 58-148.000.
P.A.L. Development Corporation: *See—*
Probst, John F., 3,763,609.
Pall Corporation: *See—*
Pall, David B., 3,763,883.
Pall, David B., to Pall Corporation. Pressure-responsive devices having controlled response to flow surges. 3,763,883, Cl. 137-501.000.
Palma, James D.: *See—*
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Palmer, Raymond B.: *See—*
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Pankavich, John Anthony: *See—*
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Pansky, Ben: *See—*
Yanof, Howard M.; and Pansky, Ben, 3,763,859.
Papalus, John G.; and Metzsch, Clinton E., to Diamond Shamrock Corporation. Sperm oil substitute and its use in leather treatment. 3,764,358, Cl. 106-249.000.
Paraskevas, Christos G. Match-book folder. 3,763,995, Cl. 206-29.000.
Parduhn, Alfred P. Signal mastarm bracket. 3,764,099, Cl. 248-214.000.
Paris, Gerard Yvon: *See—*
Swett, Leo Ralph; and Paris, Gerard Yvon, 3,764,610.
Parker, Morris Jay: *See—*
Fisher, Scott Lewis; and Parker, Morris Jay, 3,764,532.
Parker, Norman W., to Motorola, Inc. Color signal recording and decoding apparatus. 3,764,731, Cl. 178-5.20d.
Parks, Roby A.: *See—*
Orr, Bobby J.; Danner, Bill A.; and Parks, Roby A., 3,764,184.
Parry, Frank, to Branson Instruments, Incorporated. Ultrasonic seaming apparatus. 3,764,442, Cl. 156-580.000.
Parsen, Edward M., to Rausen Corporation, The. Portable and convertible reel and small equipment carrying trailer. 3,764,031, Cl. 214-506.000.
Parsons, Bernard Arthur, to IMI Developments Limited. Fluid control tap and plug assembly. 3,763,504, Cl. 4-203.000.
Parsons, James E.: *See—*
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Parsons, Samuel J.: *See—*
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Partos, Richard D., to Monsanto Company. Insecticides composition and method employing 3,4 substituted phenylmethylsulfonates. 3,764,698, Cl. 424-303.000.
Passavant, Francis C.: *See—*
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Pastorelli, Romolo; and Martini, Paolo, 3,763,616.
Pastorelli, Romolo; and Martini, Paolo, to Pastorelli, Romolo. Structural unit having an expanded metal sheet and method for manufacturing the structural unit. 3,763,616, Cl. 52-635.000.
Patent-Treuhand-Gesellschaft fur Elektrische Gulhlampen mbH: *See—*
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Patrick, Rudolph R.: *See—*
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Pattas, Konstantin: *See—*
Wahnschaffe, Jurgen; Gwinner, Dietrich; Pattas, Konstantin; and Braun, Eberhard, 3,763,649.
Patten, Raymond A.; and Blodgett, Jerry A., to United States of America, Navy. Pulsed coherence length measurement device. 3,764,217, Cl. 356-106.000.
Patterson, James A. Metal springboard with torque cells. 3,764,130, Cl. 272-66.000.
Paugh, George W., to Ralston Purina Company. Continuous cooking method. 3,764,343, Cl. 426-352.000.
Paul, William F.: *See—*
Rybicki, Robert G.; and Paul, William F., 3,764,230.
Payne, Peter R., to Blade Hulls, Inc. High speed boat with planing hull. 3,763,810, Cl. 114-66.500.
Pazos, Hector V. Semi-submersible work platform. 3,763,809, Cl. 114-.05d.
Pearl, David L.; Waller, John G., Jr.; and Waller, John G., Sr., to Grace, W. R., & Co., mesne. Portable printer for preformed cartons. 3,763,774, Cl. 101-41.000.
Pearson, David B., to Weston Instruments, Inc. Meter construction having rapid assembly features. 3,764,909, Cl. 324-156.000.
Pecheyran, Regis; and Fauvet, Emile, to GEC Elliot Automation SA. Coupling device between a digital computer and an analogically controlled installation. 3,764,827, Cl. 307-241.000.
Peddinghaus, Paul Ferd.: *See—*
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Pedersen, Ernest T.: *See—*
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Peerenboom, Robert J., to Kimberly-Clark Corporation. High-loft, nonwoven fabric having randomly directed fibers therein, and method of producing the same. 3,764,426, Cl. 156-72.000.

Pennwalt Corporation: *See—*
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Perazzoni, Pierluigi: *See—*
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Perfect Film & Chemical Corporation: *See—*
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Perkins, Thomas K., to Atlantic Richfield Company. Well insulation method. 3,763,935, Cl. 166-315.000.

Perlman, Morris, to Carbide Form Grinding, Inc. Method and apparatus for producing gaps in slide fastener chains. 3,763,546, Cl. 29-408.000.

Permut, Alan R.: *See—*
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Permut, Albert A.; Permut, Ronald M.; and Permut, Alan R. Vehicle speed and cruise control system. 3,763,954, Cl. 180-98.000.

Permut, Ronald M.: *See—*
Permut, Albert A.; Permut, Ronald M.; and Permut, Alan R., 3,763,954.

Perry, Ian James; Watson, Bruce Dunstan; Lagerche, John Geoffrey; Denman, George Alan; Irvine, Norman William; Goding, Thomas Joseph; and Moffett, Graham Douglas, to Copper Refineries Pty., Limited. Evaporative treatment of liquids by submerged combustion.3,763,915, Cl. 159-16.00a.

Perryman, John S. Releasable ski binding. 3,764,155, Cl. 280-11.35y.

Pesce, John J.: *See—*
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Peterson, Paul H.; and Thon, Duwayne M., to Winzen Research, Inc. Apparatus for measuring variations in thickness of elongated samples of thin plastic film. 3,764,899, Cl. 324-61.00r.

Peterson, Robert F., to United States of America, Navy. Speed and bearing integrator. 3,764,720, Cl. 35-10.400.

Peterson, Sheldon T.: *See—*
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Petrelli, Juan Carlos; and Soldan, Sanzio, to Dentax S.A. Anterior vestibular film for dental use. 3,763,564, Cl. 32-2.000.

Petro, Anthony J. Combination stiff and flexible golf club shaft. 3,764,137, Cl. 273-80.00b.

Petrolite Corporation: *See—*
Redmore, Derek, 3,764,548.

Peyraud, Serge; and Freiche, Jean, to Cegedur GP. Apparatus for continuous vertical casting. 3,763,924, Cl. 164-283.000.

Pfluger, Richard T.; and McGraw, John G., to Atwood Vacuum Machine Company. Combined space heater and water heater. 3,763,849, Cl. 126-101.000.

Philadelphia Quartz Company: *See—*
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Philco-Ford Corporation: *See—*
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Phillipps, Gordon Hanley: *See—*
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Phillips, Albert D. Wet cell lantern battery. 3,764,394, Cl. 136-166.000.

Phillips, Jack E. Method for treating the tobacco smoking habit. 3,764,680, Cl. 424-254.000.

Phillips Petroleum Company: *See—*
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Hsieh, Henry L.; Mueller, Francis X., Jr.; and Busler, William R., 3,764,639.
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Pierrefitte-Auby: *See—*
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Pierrel S.p.A.: *See—*
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Pigmy Health Products, Inc.: *See—*
Yanof, Howard M.; and Pansky, Ben, 3,763,859.

Pinkepank, Raymond W.; and Starr, William R., to Remington Arms Company, Inc. Automatic point protector applicator. 3,763,626, Cl. 53-142.000.

Pinto, Albert A.; and Grinner, Arthur J., to Nabisco, Inc. Apparatus for clamping sheet material to a rotary drum. 3,764,051, Cl. 226-152.000.

Pitney-Bowes, Inc.: *See—*
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Pivette, Pierre, to Pierrefitte-Auby. Method of synthetizing tertiary aliphatic amines by amination of alkyl halides. 3,764,626, Cl. 260-583.00r.

Place, Morris C., Jr.: *See—*
Darley, Henry C. H.; and Place, Morris C., Jr., 3,764,008.

Plasko, Emil Robert, to Micro Devices Corporation. Thermal limiter for one or more electrical circuits and method of making the same. 3,764,948, Cl. 337-163.000.

Platt, David M. H., to Corning Glass Works. Method for determining concentration of an element in a sample. 3,764,484, Cl. 204-1.00t.

Platt, David M. H., to Corning Glass Works. Apparatus for determining concentration of an element in a sample. 3,764,506, Cl. 204-195.00r.

Plavskikh, Vladimir Dmitrievich: *See—*
Sudnishnikov, Boris Vasilevich; Kostylev, Alexander Dmitrievich; Curkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; Klimashko, Vladimir Vasilievich; and Plavskikh, Vladimir Dmitrievich, 3,763,939.

Plempel, Manfred: *See—*
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Plessey Handel und Investments A.G.: *See—*
Wheat, Jeffrey Malcolm, 3,764,749.

Plovan, Steven G., to Celanese Corporation. Thermal copying means employing open-celled microporous film. 3,763,779, Cl. 101-473.000.

Plumly, George W., to Smith Brothers Properties. Area dialing device. 3,764,065, Cl. 235-88.000.

Plumpe, Hans; and Puls, Walter, to Bayer Aktiengesellschaft. 4-Benzene sulphonyl-1,1-[(1',4'-ethano)-pentamethylene] semicarbazides. 3,764,605, Cl. 260-293.540.

Pneumotech AG: *See—*
Glattli, Hansheinrich, 3,764,200.

Poeschel, Gordon Paul; and Pankavich, John Anthony, to American Cyanamid Company. Method of using di, tri-and tetra chlorobenzonitriles for controlling helminths. 3,764,697, Cl. 424-304.000.

Poitras, Omer. Snap-P connector. 3,764,961, Cl. 339-238.000.

Polakiewicz, Jules, to Belamco. Brilliant with octagonal table and surrounding trapezoidal facets. 3,763,665, Cl. 63-32.000.

Polaroid Corporation: *See—*
Lane, William P., 3,763,756.

Pollack, Slava A., to TRW Inc. System for converting infrared into shorter wavelength radiation. 3,764,807, Cl. 250-330.000.

Pollard, Michael H.; and Donnan, Robert G. Auxiliary tightener for fan belts on automobile engines. 3,763,715, Cl. 74-242.10a.

Pollmann, Johann: *See—*
Kramer, Heinrich; Butz, Josef; Muller, Richard; Thoma, Ludwig; Pollmann, Johann; Zielbauer, Hans; and Bernklau, Xaver, 3,764,431.

Pollock, Andre W., to Sun Oil Company of Pennsylvania. Solvent extraction of C_6-C_8 aromatic hydrocarbons. 3,764,522, Cl. 208-321.000.

Poltorak, Alexandr Pavlovich; Nedosekov, Svyatoslav Semenovich; Sameljuk, Jury Fedorovich; Vorontsov, Oleg Mikhailovich; and Sashkin, Nikolai Nikitovich. Instantaneous switch. 3,764,761, Cl. 200-76.000.

Polymer Processing Research Institute, Ltd.: *See—*
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Pomeroy, J. J., & Company, Inc.: *See—*
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Ponting, James D.: *See—*
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Poplack, William J.; McMullen, Edward W.; and Basu, Hemendra, to Unisource Foods Corporation. Method for treating beef suet to produce partially defatted tissue having a relatively low bacteria count useful for human consumption. 3,764,713, Cl. 426-233.000

Poppel, Michael Adrian: *See—*
Hepburn, Douglas Ivan, 3,764,132.

Portelli, Sam. Automatic pet food dispenser. 3,763,826, Cl. 119-52.00r.

Postlethwait, James A.: *See—*
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Potter Instrument Company, Inc.: *See—*
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Pougue, Lonnie C., to Rohr Corporation. Magnetic switching of vehicles. 3,763,788, Cl. 104-130.000.

Powanda, Thomas M.; Holzman, Lawrence B.; and Tracy, James E., to Celanese Corporation. Permanent press fabric resin from crotonylidenediurea-glyoxal-formaldehyde aminoplast material. 3,764,263, Cl. 8-115.700.

Powell, William D., Jr., to Phillips Petroleum Company. Apparatus for forming a blowing pin opening on a parison. 3,764,249, Cl. 425-311.000.

PPG Industries, Inc.: *See—*
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Matesa, Joseph M.; and Farabaugh, Aloysius W., 3,764,285.
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Precision Screen Machines, Inc.: *See—*

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Prinz, Roy H., to Celanese Corporation. Separation of alcohols and ketones using methylene chloride and water. 3,764,627, Cl. 260-593.00p.

Probst, John F., to P.A.L. Development Corporation. Shingle roofing construction. 3,763,609, Cl. 52-105.000.

Procter & Gamble Company: *See—*
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Procter & Gamble Company, The: *See—*
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Produits Chimiques Pechiney-Saint Gobain: *See—*
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Prokop, Josef F.; and Eickmeyer, Irvin A., to International Harvester Company. Clutch controlled transmission shift lock. 3,763,976, Cl. 192-3.630.

Propst, Robert L., to Miller, Herman, Inc. Pediatric bed. 3,763,507, Cl. 5-100.000.

Prost, Gerard: *See—*
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Prostler, Wolfgang; Ferschin, Peter; and Lechner, Karl, to Motoren- und Turbinen-Union Munchen GmbH. Bearing for pivotally mounted guide vanes in thermal turbomachines. 3,764,189, Cl. 308-237.000.

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Raabe, Gerhard; Eckstein, Dieter; Sauermann, Heinz; and Winkler, Gerhard. Method of manufacturing a semiconductor capacitance diode. 3,764,415, Cl. 148-191.000.

Rachel, Todd L., to Bendix Corporation, The. Fuel injection system. 3,763,833, Cl. 123-32.0ea.

Rachlin, Albert Israel: *See—*
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Rain Bird Sprinkler Mfg., Corporation: *See—*
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Rainwater, Joe H.; and Beck, Roderick G., to American Potato Company. Preparation of dehydrated mashed potatoes. 3,764,716, Cl. 99-207.000.

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Randall, Francis R., to Harsco Corporation. Side mount loading platform for van type truck. 3,764,030, Cl. 214-77.00p.

Randolph, Arthur J. Induction embossing. 3,764,767, Cl. 219-10.490.

Rank Organisation Limited, The: *See—*
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Rapid-American Corporation, mesne: *See—*
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Raschle, Josef, to Heberlein Patent Corporation. False twisting apparatus. 3,763,642, Cl. 57-77.450.

Rathborn, Richard P.; and Stanton, Garth M., to Chevron Research Company. Ultrasonic inspections using polymeric materials as couplants. 3,763,694, Cl. 73-67.5us.

Rausch, John J.: *See—*
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Rausch, John J.; and Van Thyne, Ray J., to Surface Technology Corporation. Nitrided-oxidized/boronized materials. 3,764,405, Cl. 148-31.500.

Rausen Corporation, The: *See—*
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Rawlings, Charles S., 20% to Lee, Raymond, Organization, Inc., The. Automatic landing gear device. 3,764,162, Cl. 280-150.500.

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Raytheon Company: *See—*
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R.B.H. Cybernetics (1970) Ltd.: *See—*
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RCA Corporation: *See—*
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Napoli, Louis Sebastian; and Reichert, Walter Francis, 3,764,865.

Rector, Carl I. Underwater garment and method of making. 3,763,498, Cl. 2-2.10r.

Redmayne, Ian G., to B.I.X. Limited. Radiographic examination of pipe joints. 3,764,806, Cl. 250-491.000.

Redmore, Derek, to Petrolite Corporation. Oxygen scavenger and use thereof. 3,764,548, Cl. 252-188.000.

Rees, Herbert: *See—*
Van Melle, Hugh; and Rees, Herbert, 3,764,025.

Reeve, John; and Sevcenco, Jura A., to Westinghouse Canada Limited. Control apparatus for the prevention of premature firing of valves of a converter. 3,764,882, Cl. 321-5.000.

Reeve, John, to Westinghouse Canada Limited. Voltage to time conversion apparatus for an electrical converter. 3,764,884, Cl. 321-9.00a.

Regel, Erik: *See—*
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Regie Nationale des Usines Renault: *See—*
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Regitz, William M., to Honeywell Information Systems Inc. Memory storage cell with single selection line and single input/output line. 3,765,000, Cl. 340-173.0ca.

Reich, Rudolf. Method and apparatus for threading yarn ends into the working needles of embroidery stitching and sewing machines. 3,763,804, Cl. 112-225.000.

Reich, Zygmund: *See—*
Schachter, Jacob; Reich, Zygmund; and Greenberg, David R., 3,763,676.

Reichert, Donald G., to ABC Packaging Machine Corporation. Box forming machine. 3,763,750, Cl. 93-53.0bf.

Reichert, Eduard: *See—*
Brosch, Leo; Fechner, Gerd; and Reichert, Eduard, 3,764,834.

Reichert, Walter Francis: *See—*
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Reid, James S., to Standard Products Company, The. Apparatus and method for cleaning waste disposal systems. 3,764,010, Cl. 210-149.000.

Reifers, Richard F.; and Bixler, Kenneth D., to Diamond International Corporation. High strength open bottom packaging tray. 3,764,057, Cl. 229-2.500.

Reikkinen, Asko Sakari, to Oy Nokia AB. Transfer vehicle for reels. 3,763,965, Cl. 187-9.000.

Reiland, Bernard F., to Textron, Inc. Threaded fastener device with torque control and driver therefore. 3,763,725, Cl. 81-121.00r.

Reimels, Harry G., to Codman & Shurtleff, Inc. Vein stripping instrument. 3,764,427, Cl. 156-73.000.

Reimers, George W.: *See—*
Khalafalla, Sanaa E.; and Reimers, George W., 3,764,540.

Reinertsen, Tormod K., to Ideal Toy Corporation. Game including balancing platform. 3,764,134, Cl. 273-1.00r.

Reinhardt, Helmut; and Trebiner, Karl, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of calcium hexacyanoferrate (II). 3,764,659, Cl. 423-367.000.

Reitmayer, Franz: *See—*
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Reliable Attachment Co., Inc.: *See—*
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Remington Arms Company, Inc.: *See—*
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Resource Control, Inc.: *See—*
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Respess, John H., to Morganite Incorporated. Method and apparatus for manufacturing articles such as carbon brush assemblies. 3,763,556, Cl. 29-628.000.
Restaino, Alfred J., to ICI America, Inc. Water-soluble sodium acrylate polymers of high molecular weight. 3,764,502, Cl. 204-159.220.
Reudink, Douglas Otto John: *See*—
Cox, Donald Clyde; and Reudink, Douglas Otto John, 3,764,915.
Rexnord Inc.: *See*—
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Reyes, Zuila, to McCall Corporation. Photographic polymer composition and process for cross linking. 3,764,324, Cl. 96-35.100.
Reynolds, Clifton J.: *See*—
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Rhee, Dong Woo: *See*—
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Rheingold, Lawrence M.; and Berlin, Milton, to Alumet Corporation, The, mesne. Mechanochemical sheet metal blanking system. 3,764,276, Cl. 29-190.000.
Rheinstahl Aktiengesellschaft: *See*—
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Rhone-Poulenc-Textile, S.A., mesne: *See*—
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Riccio, Pasquale R., to Ciba-Geigy Corporation. Compressed air fluid product dispenser. 3,764,046, Cl. 222-193.000.
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Richard, Gerard Yves, to Ste d'Application de Produits Industriels et Chimiques Sarl Departement Sigma. Apparatus for regenerating foundry sand. 3,764,078, Cl. 241-40.000.
Richardson, Berton Leigh: *See*—
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Richardson, James Paul, to British Aircraft Corporation Limited. Aircraft having variable sweep-backwings. 3,764,093, Cl. 244-46.000.
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Ricoh Co., Ltd.: *See*—
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Yoshida, Shigeaki; and Matsui, Takeshi, 3,764,326.
Ridders, Johannes Antonius Maria; Mollet, Adrianus Josephus Theresia; and Termuelen, Arend Jan, to U.S. Philips Corporation. Arrangement for the introduction of material in an electric discharge vessel. 3,764,842, Cl. 313-177.000.
Rieke, Wilhelm, to Rheinstahl Aktiengesellschaft. Cartridge feeding and loading device for light weapons. 3,763,741, Cl. 89-33.00a.
Rigdon, Orville W.: *See*—
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Riggert, Marvin C.: *See*—
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Riley, Joseph L. Truck pre-loader. 3,764,029, Cl. 214-41.000.
Rindeborg, Ake. Weather protecting and view obstructing screen. 3,763,606, Cl. 52-64.000.
Ringwall, Carl Gustave: *See*—
Conroy, Thomas Francis; and Ringwall, Carl Gustave, 3,763,534.
Rinta, Jussi. Method for transporting fluids or gases sparsely soluble in water. 3,763,652, Cl. 61-.500.
Ripley, Charles C., to General Electric Company. Nuclear fuel assembly. 3,764,471, Cl. 176-78.000.
Risbeck, John S.: *See*—
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Rittler, Alfred J.; and Wilmer, Michael E., to Xerox Corporation. Electrographic recording system. 3,765,026, Cl. 346-74.0es.
Roberts, Benjamin W., Jr. Process for making carbon fiber. 3,764,662, Cl. 423-447.000.
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Robertson, Peter Struan: *See*—
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Robinson, Ernest B.; Ehrlich, Shelton; and Bishop, John W., to United States of America, Interior. Apparatus for burning sulfur containing fuels. 3,763,830, Cl. 122-4.00d.
Robinson, Eugene A., to Collins Radio Company. RF power amplifier. 3,764,932, Cl. 330-30.00r.
Robinson, Leroy E., to Phillips Petroleum Company. Method for forming a protrusion in a blow molded article. 3,764,644, Cl. 264-89.000.
Rocker, Dietrich: *See*—
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Rockerath, John L., to Jetsew Inc. Retractable sewing machine cutting mechanism. 3,763,800, Cl. 112-130.000.
Rockford Screw Products Company: *See*—
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Rockwell, Harry Brown. Combination frame and exhaust system for motor vehicles. 3,763,950, Cl. 180-64.00a.
Rockwell International Corporation: *See*—
Hagel, Jerrold A.; and Tromel, Richard H., 3,764,255.
Roda, Raymond J., to Bagcraft Corporation. Reclosable bag. 3,764,060, Cl. 229-65.000.
Rodgers, Leonard John: *See*—
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Rodine, Thomas G., to Hewlett-Packard Company. Phasemeter employing means for preventing errors in the phase reading produced by noise. 3,764,902, Cl. 324-83.00r.
Roeser, John O. Electrical switch. 3,764,762, Cl. 200-68.000.
Roggero, Arnaldo: *See*—
Arrighetti, Sergio; Roggero, Arnaldo; Vajna, Eugenio; and Cesca, Sebastiano, 3,764,588.
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Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Barrachina, Antonio Vila-Coro, to Laboratorios Made, S.A. Method of obtaining cytosine inosinate and derivatives thereof. 3,764,594, Cl. 260-211.50r.
Rolfson, Emmet H. Apparatus for confining floating pollutants. 3,764,015, Cl. 210-242.000.
Rolls-Royce (1971) Limited: *See*—
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Rollwitz, William L. Spectroscopic apparatus. 3,764,892, Cl. 324-.50r.
Rome, George K. Stamp dispenser. 3,764,439, Cl. 156-442.000.
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Rooks, J. F. Wrist exerciser. 3,764,131, Cl. 272-67.000.
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Ropiequet, Richard L.; and Montag, Margaret J. Thermoplastic film articles. 3,764,453, Cl. 161-147.000.
Rose, Joel S. Educational apparatus. 3,763,574, Cl. 35-9.00d.
Rose, John Brewster: *See*—
Newton, Alan Branford; Rose, John Brewster; and Leslie, Victor Jeffrey, 3,764,583.
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Rosenkranz, Dieter: *See*—
Bous, Karl; Rosenkranz, Dieter; and Gorgen, Kurt, 3,763,669.
Rosenthal, Christian, to Chemische Werke Munchen Otto Barlocher GmbH. Process of granulating polymeric materials. 3,764,572, Cl. 260-23.0xa.
Rosenthale, Marvin E., to American Home Products Corporation. Methods for relieving bronchial spasm with prostaglandin-$F_{\alpha}\beta$ and derivatives. 3,764,699, Cl. 424-305.000.
Rosi, David: *See*—
Collins, Joseph C.; and Rosi, David, 3,764,612.
Ross, Robert Elmer, to International Business Machines Corporation. Storage control and address translation. 3,764,996, Cl. 340-172.500.
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Rotax Limited: *See*—
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Rowe, George E., to Emhart Corporation. Method and apparatus for treating newly formed ware. 3,764,284, Cl. 65-60.000.
Rowe, Loyal T. Trolling apparatus for boats. 3,763,812, Cl. 114-145.00a.
Roy, Henry, to DBM Industries, Limited. Apparatus attachable to an EDM for rotating electrode. 3,764,771, Cl. 219-69.00v.
Rubbermaid Sales Corporation: *See*—
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Rubinstein, Richard B.: *See*—
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Ruff, Herbert L. Upset-preventing devices for tractors. 3,763,956, Cl. 180-104.000.

Rundell, Gene R.: *See—*
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Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Scarbrough, Don R.; and Wilhelm, Frederick R., to Nordson Corporation. Method and apparatus for spraying. 3,764,069, Cl. 238-8.000.

Russell, Donald W.: *See—*
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Russell, Robert J.; and Pierce, Edwin F., said Russell assor. to Kenco Corporation. Envelope opening method and apparatus. 3,764,049, Cl. 225-3.000.

Russo, Robert Victor, to Celanese Corporation. Moldable polybutylene terephthalate compositions containing acicular calcium metasilicate. 3,764,576, Cl. 260-40.00r.

Rybicki, Robert G.; and Paul, William F., to United Aircraft Corporation. Articulated helicopter rotor utilizing plural elastomeric bearings for articulated support of the blade from the rotor hub. 3,764,230, Cl. 416-134.000.

Ryco Graphic Mfg., Inc.: *See—*
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Rydax, Incorporated: *See—*
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Rypinski, Chandos A., Jr., to Rydax, Incorporated. Method and apparatus for demodulating a phase reversal modulated alternating current wave. 3,764,926, Cl. 329-104.000.

S.A. Bekaert-Cockerill: *See—*
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Saad, Theodore S.; and Miller, Matthew S., to Sage Laboratories, Inc. Microwave oven. 3,764,770, Cl. 219-10.550.

Sabella, Andrew: *See—*
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S.A.C.E. S.p.A. Construzioni Elettromeccaniche: *See—*
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Sacher, Christian: *See—*
Dieter-Schneider, Hans; Treusch, Georg; and Sacher, Christian, 3,764,735.

Sagami Chemical Research Center: *See—*
Kanazawa, Teiichi; Ogawa, Shigeru; Matsui, Sadayoshi; and Shimizu, Masamichi, 3,764,661.

Sage, Jim. Key tag. 3,763,820, Cl. 116-135.000.

Sage Laboratories, Inc.: *See—*
Saad, Theodore S.; and Miller, Matthew S., 3,764,770.

Saginaw Products Corporation: *See—*
Hearn, Leo E., 3,764,165.

Saida, Hiroji: *See—*
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Sailor Pen Co., Ltd., The: *See—*
Ishida, Nobuhisa; and Tsubouchi, Toshiyuki, 3,764,022.

Saino, Joseph N. Composite firedoor with an adjustable edge. 3,763,612, Cl. 52-309.000.

Saint-Gobain Industries: *See—*
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Saito, Seiichi: *See—*
Kawazu, Mitsutaka; Kanno, Takeshi; Saito, Seiichi; and Tamaki, Hajime, 3,764,607.

Sakabe, Akira; Sakagami, Mitsuhiro; and Arai, Kunio, to Hitachi, Ltd. Automatic welding method and apparatus. 3,764,777, Cl. 219-125.00r.

Sakagami, Mitsuhiro: *See—*
Sakabe, Akira; Sakagami, Mitsuhiro; and Arai, Kunio, 3,764,777.

Sakashita, Kiyoshi: *See—*
Mukoh, Akio; Mori, Yasuki; Sakashita, Kiyoshi; Nozaki, Sukekatsu; and Hagitani, Akira, 3,764,590.

Sakurai, Hiroo: *See—*
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Sample, Steven B.: *See—*
Scheuer, Paul R.; Zane, Victor H.; and Sample, Steven B., 3,764,871.

Samuelson, Hans Olof, to Mo Och Domsjo AB. Process for preparing cellulose pulp by alkaline oxygen digestion of wood in the presence of alkali metal carbonate or bicarbonate. 3,764,464, Cl. 162-65.000.

Sanders, Fred E. Portable toothbrush. 3,763,869, Cl. 132-84.00b.

Sandner, Erich. Cylindrical flute. 3,763,737, Cl. 84-384.000.

Sandoz, Ltd.: *See—*
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Sandoz-Wander, Inc.: *See—*
Barcza, Sandor, 3,764,597.
Galantay, Eugene E., 3,764,596.
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Sandvik Aktiebolag: *See—*
Troselius, Lars Johan Bertil; Sparre, Claes Ulf Casimir; and Kiessling, Roland Richard, 3,764,302.

Saner, Kaspar, to Wirth, Gallo & Co. Tiltproof damping apparatus. 3,763,971, Cl. 188-322.000.

Sangster, Arlon G. Gas supported free-running belts for testing operational characteristics of engine driven vehicles supported on the belts. 3,763,699, Cl. 73-117.000.

Sangster, Frederik Leonard Johan, to U.S. Philips Corporation. Shift register. 3,764,824, Cl. 307-221.00c.

Santorelli, Salvatore L. Method of making microbiocidal complexes. 3,764,669, Cl. 424-80.000.

Saravis, Calvin A., to Marine Colloids, Inc. Electrophoresis chamber. 3,764,513, Cl. 204-299.000.

Sasaki, Hiromu: *See—*
Matsuo, Yoshihiro; Sasaki, Hiromu; and Hayakawa, Shigeru, 3,764,529.

Sasaya, Minoru: *See—*
Okubo, Kazuo; Ueho, Hiroshi; Sasaya, Minoru; Toyama, Takashi; and Tsurumaru, Michiko, 3,763,895.

Sashkin, Nikolai Nikitovich: *See—*
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Sato, Akira: *See—*
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Sauermann, Heinz: *See—*
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Saunders, Alexander M., to Technicon Instruments Corporation. Method and apparatus for mixing liquids. 3,763,873, Cl. 137-1.000.

Saunders, Derek, to Vero Electronics Limited. Mounting for circuit boards. 3,764,954, Cl. 339-65.000.

Savastano, Giorgio: *See—*
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Sawada, Tetsuya. Automatic carton case manufacturing device. 3,763,749, Cl. 93-51.00r.

Sawyer, Samuel P.; and Sobel, Alan, to Zenith Radio Corporation. Flat panel image display. 3,765,011, Cl. 340-324.00m.

Sayer, William H., Jr. Microwave applicator employing a broadside slot radiator. 3,764,768, Cl. 219-10.550.

Sayko, Augustus Julius, to Bell Telephone Laboratories, Incorporated. Fabrication of gallium arsenide devices. 3,764,424, Cl. 156-17.000.

Sayles, David C., to United States of America, Army. Advanced solid propellant for antitank propulsion subsystems. 3,764,418, Cl. 149-19.910.

Sayles, David C., to United States of America, Army. Suppression of combustion instability by means of PBI fibers. 3,764,420, Cl. 149-21.000.

Says, Robert H., to Philadelphia Quartz Company. Hydrated alkali metal silicate glass particles with sequestering agents. 3,764,356, Cl. 106-74.000.

Scarbrough, Don R.: *See—*
Runstadler, Peter W., Jr.; Nord, Eric T.; Hastings, Donald R.; Scarbrough, Don R.; and Wilhelm, Frederick R., 3,764,069.

Scarlett, John C.: *See—*
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Schachter, Jacob; Reich, Zygmund; and Greenberg, David R., to Instrument Systems Corporation. Programmable lock system. 3,763,676, Cl. 70-264.000.

Schaefer, F. & M., Brewing Co., The: *See—*
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Schallenberg, Elmer E.: *See—*
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Schamberger, Heinz, to Patent-Treuhand-Gesellschaft fur Elektrische Gulhlampen mbH. Laser apparatus and mirror adjustment mechanism therefor. 3,764,934, Cl. 331-94.500.

Schantz, John S., 1/3 to Schantz, Raymond G. and 1/3 to Schantz, Socrates J. Portable three-in-one deep fat fryer, griddle and barbeque combination. 3,763,846, Cl. 126-41.00s.

Schantz, Raymond G.: *See—*
Schantz, John S., 3,763,846.

Schantz, Socrates J.: *See—*
Schantz, John S., 3,763,846.

Scharfenberger, James A., to Ransburg Electro-Coating Corporation. Fiber cutter. 3,763,561, Cl. 30-128.000.

Schecker, Hans Georg: *See—*
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Scheda, Gerhard, to Boekels, Hans, Dr., & Co. Metal detector and checking arrangement therefor. 3,764,860, Cl. 317-146.000.

Schedewie, Franz Joseph, to International Business Machines Corporation. Light beam edge detection. 3,764,218, Cl. 356-118.000.

Scheerer, Joachim: *See—*
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Scheib, Louis: *See—*
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Scheid, William J.: *See—*
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Scheiner, Bernard J.; and Lindstrom, Roald E., to United States of America, Interior. Recovery of gold from ores. 3,764,650, Cl. 423-38.000.

Schenbeck, Robert E., to McDonnell Douglas Corporation. Multichannel autopilot with equalization means for a resilient control system. 3,764,095, Cl. 244-77.00m.

Schering AG: *See—*
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Scheuer, Paul R.; Zane, Victor H.; and Sample, Steven B., to Design & Manufacturing Corporation. Starting circuit for induction motor. 3,764,871, Cl. 318-207.00r.

Scheuerpflug, Hans, to Fuchs, Johannes, Firma. Rotary crane. 3,764,021, Cl. 212-35.000.

Schick Incorporated: *See—*
Bartram, Nial C.; and Scheid, William J., 3,763,573.

Schiffer, Gunter; and Lopata, Karl Peter, to Kleinewefers, John., Sohne. Textile treating device. 3,763,671, Cl. 68-85.000.

Schild, Charles W. Simulated fishing game. 3,764,138, Cl. 273-85.00r.

Schimmelpfenig, Frederick J., to General Motors Coproration. Fuel line shut off valve for pressurized fuel systems. 3,763,840, Cl. 123-136.000.

Schlicht, Raymond C., to Texaco Inc. Tetra-t-dodecylamarcapto-p-benzoquinone. 3,764,535, Cl. 252-48.200.

Schlichtig, Ralph C. Pneumatic powered diaphragm pump system for heat transfer. 3,763,663, Cl. 62-498.000.

Schlinger, Warren G.; Slater, William L.; Dille, Roger M.; and Tassoney, Joseph R., to Texaco Inc. Slurries of solid carboniferous fuels. 3,764,547, Cl. 252-184.000.

Schlotfeldt, Walter A. Apparatus for producing contact lenses. 3,763,597, Cl. 51-33.00r.

Schlumberger Technology Corporation: *See—*
Anderson, Ronald A., 3,764,968.
Cubberly, Walter E., Jr., 3,764,969.
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Schmid, Eckart: *See—*
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Schmid, Eduard; Bruttel, Beat; Nascher, Reinold; and Egli, Rene, to Lonza Ltd. Separation process for solid particles of differing shape. 3,764,007, Cl. 209-211.000.

Schmidt, Alfred T. Gas discharge lamp and method for making same. 3,764,844, Cl. 313-220.000.

Schmidt, Fritz: *See—*
Kohler, Hubert; and Schmidt, Fritz, 3,764,726.

Schmidt, Gerhard Alfred. Fe-Cr-Nb-Co-Mn-Mo welding material and blank wire and bare band electrode forms thereof. 3,764,303, Cl. 75-128.00a.

Schmidt, Karl, GmbH: *See—*
Anderko, Kurt; Stark, Manfred; and Diez, Adolf, 3,764,575.

Schmidt, Werner; and Zukier, Hubert, to Siemens Aktiengesellschaft. Method for interconnecting contact layers of a circuit board. 3,764,436, Cl. 156-288.000.

Schmitt, Helwig. Reversible chassis for self-propelling combines. 3,763,637, Cl. 56-228.000.

Schmitz, Joseph F., to Whirlpool Corporation. Vacuum cleaner construction. 3,763,635, Cl. 55-374.000.

Schneider, Marvin, to Rapid-American Corporation, mesne. Method of making an utility bag. 3,764,433, Cl. 156-245.000.

Schneider, Roy W.: *See—*
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Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft: *See—*
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Schoon, David J., to Minnesota Mining and Manufacturing Company. System for growing aquatic organisms. 3,763,824, Cl. 119-4.000.

Schrading, Mark S., to Kimberly-Clark Corporation. Surgical drape. 3,763,857, Cl. 128-132.00d.

Schrafft, Frederick E., to Lee, Raymond, Organization, Inc., The. Game using magnets to simulate the pull of gravity. 3,764,145, Cl. 273-131.0ad.

Schrenk, Walter J., to Dow Chemical Company, The. Method for making a metallized barrier structure or film. 3,764,430, Cl. 156-150.000.

Schroder, Jurgen: *See—*
Ochel, Gunter; and Schroder, Jurgen, 3,764,913.

Schroder, Karl-Heinz; and Zwicker, Wolfgang, to Pulsotronic Merter KG. Arrangement for controlling the steering of vehicles directed along a predetermined path. 3,763,955, Cl. 180-98.000.

Schroter, Carl; and Mulfinger, Eckhard, to Hermann, Heinrich. Film splicing press and sticker supply therefor. 3,764,440, Cl. 156-505.000.

Schuck, Paul Robert: *See—*
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Schuil, Roelof Egbert, to U.S. Philips Corporation. Luminescent alkaline earth sulfate phosphor and method of preparation. 3,764,554, Cl. 252-301.450.

Schulte, Joseph B., to GAF Corporation. Apparatus for the manufacture of contoured asbestos sheet. 3,764,252, Cl. 425-383.000.

Schultz, Robert C. Resurfacing tool. 3,763,562, Cl. 30-166.000.

Schultz, Seiford F., to United States of America, Army. Carpet roll reinforced propellant and method for making. 3,763,787, Cl. 102-100.000.

Schulz, Dietrich, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Flashing warning light. 3,764,799, Cl. 240-24.000.

Schulze, Fritz H., to Comten. Method of and apparatus for code detection. 3,764,987, Cl. 340-172.500.

Schuster, Dietrich. Bacteriocidal non-corrosive biodegradable composition and method of manufacturing same. 3,764,593, Cl. 260-97.500.

Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Electrolytic oxidation of silicon. 3,764,491, Cl. 204-56.00r.

Schwartz, Morris; Chedister, Conkling; and Beckman, Frank H., to Kalart Company, Inc., The. Motion picture film projector. 3,764,203, Cl. 352-124.000.

Schwarzkopf, Henry; and Bouvier, John J., to Ferro Corporation. Diamond abrasive cut-off wheel. 3,763,601, Cl. 51-206.400.

Schweizerische Aluminium AG (Swiss Aluminium Ltd.): *See—*
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Schwerdt, Paul: *See—*
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Schy, Frank R. Taco cooking apparatus. 3,763,764, Cl. 99-353.000.

Science Union et Cie, Societe Francaise de Recherche Medicale: *See—*
Malen, Charles; Danree, Bernard; and Desnoyers, Pierre, 3,764,702.

Scott Paper Company: *See—*
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Baierl, Kenneth W., 3,764,462.

Scovill Manufacturing Company: *See—*
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Scully, Lawrence J., to Dictaphone Corporation. Pressure roll assembly for tape recording and playback equipment. 3,764,052, Cl. 226-176.000.

Seager, Ronald W.; Lonigro, Dennis A.; and Lowenschuss, Oscar, to Raytheon Company. Digitally controlled attenuator. 3,765,020, Cl. 343-5.0sm.

Sealol, Inc.: *See—*
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Seals, William O.: *See—*
Costa, Edward; Lantz, Robert; and Seals, William O., 3,764,416.

Searle, G. D., & Co.: *See—*
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Seeley, Ralph M., Jr.; and Finlon, Francis P., to United States of America, Navy, mesne. Underwater tracking system. 3,764,964, Cl. 340-6.00r.

Seiner, Jerome A., to PPG Industries, Inc. Article of manufacture having thereon a stable reflective coating containing fluorinated aliphatic long chain addition polymers. 3,764,364, Cl. 117-18.000.

Seitzer, Walter H.: *See—*
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Sekigawa, Toshihiro: *See—*
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Seltzer, Daniel Arron: *See—*
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Sevcenco, Jura A.: *See—*
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Sewell, Cyrus G. Automatic carton opener. 3,763,557, Cl. 30-2.000.

Sewell, Richard B. H.; and Nelson, Simon P., to R.B.H. Cybernetics (1970) Ltd. Belt for picking up liquids. 3,764,016, Cl. 210-400.000.

Seydelmann, Horst. Vacuum cutter. 3,764,081, Cl. 241-199.700.

Shah, Indravadan S., to Chemical Construction Corporation. Multistage removal of entrained solids and sulfur dioxide from gas streams. 3,764,654, Cl. 423-242.000.

Shank, William E., to Landis Tool Company. Carriage positioning device for a grinding machine. 3,763,600, Cl. 51-105.0sp.

Shannon, Hugh F.: *See—*
Furlong, Louis E.; Zimmerman, Abraham A.; and Shannon, Hugh F., 3,764,282.

Shapland, Earl P.; and Shapland, James T., to United States Steel Corporation. Reciprocable slidable gare with rotating slide element. 3,764,042, Cl. 222-1.000.

Shapland, James T.: *See—*
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Sharp. James H.: *See—*
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Sharp Kabushiki Kaisha: *See—*
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Shatila, Mounir A.: *See—*
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Shaw, Richard Gregg; and Byck, Joseph Sylvan, to Union Carbide Corporation. Fluid transfer membrane use thereof and method of manufacture therefor. 3,764,018, Cl. 210-500.000.

Shaw-Walker Company, The: *See—*
Anderson, Clarence A. F., 3,764,190.

Sheeran, Harold W.; and Oriard, Marcel H. Method of making a blasting agent having variable density. 3,764,419, Cl. 149-21.000.
Shelef, Ginton, to Shell Oil Company. Method of improving a process with many variables. 3,765,028, Cl. 444-1.000.
Shelffo, Loren E., to Addressograph-Multigraph Corporation. Electroscopic printing powder. 3,764,538, Cl. 252-62.100.
Shell Oil Company: *See—*
Darley, Henry C. H.; and Place, Morris C., Jr., 3,764,008.
Groenendaal, Willem; and Lenz, Walter M., 3,764,665.
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Shely, Benjamin L., to Minnesota Mining and Manufacturing Company. Electrographic field electrode. 3,764,313, Cl. 96-1.500.
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Shepherd, James C. Receptacle for cigarette lighter. 3,763,996, Cl. 206-41.400.
Sherwin-Williams Company, The: *See—*
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Shiba Electric Co., Ltd.: *See—*
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Shiba, Ketsuki; Takei, Harod; Sato, Akira; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,764,340, Cl. 96-124.000.
Shibanai, Ichiro, to Kyoshin Sangyo Co., Ltd. Polychromatic watch dial plate. 3,763,647, Cl. 58-126.00r.
Shih, Kwang K. S.: *See—*
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Shimizu, Masamichi: *See—*
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Shimizu, Rentaro: *See—*
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Shimizu, Sakae; and Shimizu, Rentaro, to Ricoh Co., Ltd. Treating liquid for electrophotographic offset master. 3,764,353, Cl. 106-2.000.
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Shipley Company, Inc.: *See—*
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Shiraishi, Hirofumi, to Tokyo Shibaura Electric Co., Ltd. Fluorescent lamp providing visible light and Dorno rays. 3,764,840, Cl. 313-109.000.
Shirvany, John Anoush, to Jackson, Bryon, Inc. Cushioned dock fender structure and shear type cushion member. 3,763,653, Cl. 61-46.000.
Shivell, Philip J. Check strap assembly. 3,763,898, Cl. 139-161.00s.
Shoei Kabushiki Kaisha: *See—*
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Shoesmith, Terry: *See—*
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Shook, Frederick R. Replaceable blade propeller assembly. 3,764,228, Cl. 416-93.000.
Shoop, John C.; and Anderson, Robert R., to Gardner-Denver Company. Minimum pressure valve for liquid injected gas compressor. 3,763,882, Cl. 137-494.000.
Shopsky, Harvey J., to Robertshaw Controls Company. Fuel control device and system utilizing the same. 3,764,102, Cl. 251-96.000.
Shoup, Robert Donald: *See—*
Block, Jacob; Shoup, Robert Donald; Laine, Norman Raymond; and Triggiani, Leonard Vincent, 3,764,550.
Showa Denko K.K.: *See—*
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Siclari, Francesco; Perazzoni, Pierluigi; and Silvestroni, Pier Torgio, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A. Method for the production of synthetic polymer, more particularly polyamides, for obtaining yarns having a high ffinity to basic dyestuffs, and polymers and yarns obtained thereby which comprises adding an aromatic aldehyde containing sulfonic acid groups to the reacting monomers. 3,764,585, Cl. 260-72.00n.
Siedman, Jack: *See—*
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Siegel, Emil: *See—*
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Sills, Donald K.; and Queen, Hardis, to Ryco Graphic Mfg., Inc. Method for surface maintenance of printing press blanket cylinders. 3,763,778, Cl. 101-426.000.
Silverman, Ralph. Safety storage structure. 3,764,035, Cl. 220-15.000.
Silvestroni, Pier Torgio: *See—*
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Simmons, George A., to Owens-Illinois, Inc. Glass ceramic and process therefor. 3,764,444, Cl. 161-1.000.
Simons, Brent S.; and Nurse, Howard L., to Itek Corporation. Shared memory circuit. 3,764,999, Cl. 340-172.500.
Sims, Leslie L.; and Lawrence, Walter W., Jr., to Ethyl Corporation. Chlorine dioxide production. 3,764,663, Cl. 423-478.000.
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Sink, William Howard, to Dana Corporation. Brake with torque limiting coupling. 3,763,977, Cl. 192-7.000.
Sisil, Paul N., to Aine, Harry E. Foldable and trailerable pontoon boat. 3,763,511, Cl. 9-1.00t.
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Skolnick, Michael L.; and Buczek, Garl J., to United Aircraft Corporation. Frequency controlled, passively Q-switch laser. 3,764,937, Cl. 331-94.500.
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Slavin, Rady Mikhailovich; Levin, Vilyam Lvovich; and Kishechnikov, Sergei Andreevich. Installation for automatic placement of eggs into cellular trays. 3,763,625, Cl. 53-62.000.
Slobbe, Walter W.: *See—*
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Smiley, Nolan, Jr. Instrument control linkage. 3,763,712, Cl. 74-96.000.
Smith, Bernard; and De Pietro, Anthony. Safety bottle cap. 3,764,033, Cl. 215-9.000.
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Smith, Horace L., Jr., to Smitherm Industries, Inc. Roasting apparatus. 3,763,766, Cl. 99-468.000.
Smith, James, to U.S. Philips Corporation. Glow-discharge display device. 3,764,847, Cl. 315-52.000.
Smith, John J.: *See—*
Leopold, Wilbur R., Jr.; Smith, John J.; Hackman, Frank C.; Luckenbill, Lawrence F.; and Daghe, Joseph L., 3,763,880.
Smith, Kenneth C., to Dayco Corporation. Drafting roller construction. 3,763,532, Cl. 29-129.000.
Smith, Marvin O., Jr., to Bethlehem Steel Corporation. Blast furnace stove. 3,764,260, Cl. 432-217.000.
Smith, Ralph David: *See—*
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Smith, Richard R., Sr. Universal marine module. 3,763,808, Cl. 114-.50f.
Smith, Russell M., to General Electric Company. Traction motor speed regulation for propulsion systems providing smooth stepless changes in speed and automatic wheel slip control. 3,764,867, Cl. 318-52.000.
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Solenghi, Therese Genevieve. Device for application of paste-like or liquid products. 3,764,221, Cl. 401-129.000.
Solms-Baruth, Hubertus Graf Zu; and Honisch, Egon, to Milchwirlschaftliche Forschungsund Untersuchlungs GmbH. Process for sterilizing and filling aerosol containers. 3,763,900, Cl. 141-3.000.
Solomon, Arieh. Razor blade dispensers. 3,764,040, Cl. 221-76.000.
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Southard, James S., to Conn. C. G., Ltd. Automatic rhythm system providing drum break. 3,764,722, Cl. 84-1.030.
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Spademan, Charles F.; and Marsalka, Joseph P., to MI² Inc. Magnetic tape data processing system. 3,764,986, Cl. 340-172.500.
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Spohn, Eberhard. Process for the treatment of decomposable raw material. 3,764,290, Cl. 71-9.000.
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Srivastava, Gopal Krishna; and Thomas, Joseph Edward, to GTE Sylvania Incorporated. Automatic peak colour control. 3,764,734, Cl. 178-5.4ac.
St. Clair, Theodore A., to Textron, Inc. Insulated swivel connection. 3,764,169, Cl. 285-352.000.
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Stankewich, Michael J., Jr., to Union Carbide Corporation. Phosphorous removal from wastewater. 3,764,524, Cl. 210-5.000.
Stankewich, Michael Joseph, Jr., to Union Carbide Corporation. Nitrification of BOD-containing water. 3,764,523, Cl. 210-5.000.
Stanley, Joseph, Jr., to Kay Laboratories, Inc. Method of making a pack for absorbing or adding heat. 3,763,622, Cl. 53-25.000.
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Stern, Arthur M.; and Gasner, Lawrence L., to Betz Laboratories, Inc. Mass transfer device. 3,764,014, Cl. 210-220.000.

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Stewart, James M., to Stewart Research Inc. Dental handpiece. 3,763,664, Cl. 64-4.000.

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Stokes, Roy E., to General Electric Company. RF matching system for high frequency relays. 3,764,939, Cl. 333-7.000.

Stone, Harris E. Cap for carpet roll core. 3,763,619, Cl. 53-3.000.

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Stover, Jordan H., III, to Rockford Screw Products Company. Self-locking bolt. 3,763,909, Cl. 151-14.00r.

Strande, Carl S. Device for taking samples of the contents of capillary tubes. 3,763,705, Cl. 73-423.00a.

Strandskov, Frede B.; and Ziliotto, Henry L., to Schaefer, F. & M., Brewing Co., The. Preservation of beer. 3,764,342, Cl. 426-151.000.

Strauch, Ernst; and Bleier, Gerhard, to Leitz, Ernst, G.m.b.H. Method of providing the cylindrical inner surface of a lens mount with rolls and lens mount provided therewith. 3,763,543, Cl. 29-406.000.

Strauss, Albert B.; and Mutter, William H., to Quin Data, Inc. Revision typewriter system. 3,763,985, Cl. 197-20.000.

Strem, Joseph G.; Juskey, John S.; and Moschovis, Elias P., to APECO Corporation. Method of forming lithographic printing plate. 3,764,323, Cl. 96-33.000.

Strickland, Alvah T., to United States of America, Navy. Submersible motor-pump assembly. 3,764,233, Cl. 417-414.000.

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Tarjanyi, Michael; and Strier, Murray P., 3,764,498.

Strong, Douglas H., to Diamond Shamrock Corporation. Stabilization of polymercaptans. 3,764,578, Cl. 260-45.700.

Strong, Philip L.; Hunter, Don L.; and Le Febre, Cecil W., to United States Borax & Chemical Corporation. N-Substituted-2,6-dinitro-3-(alkoxy or alkylthio)-4-substituted-aniline compounds. 3,764,624, Cl. 260-574.000.

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Sturm, Hans Juergen: *See*—
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Subject, Frank: *See*—
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Suda, Hideaki; Kanda, Tatsuo; Murata, Yoshiro; Hida, Hiromu; and Kubo, Toshio, to Sumitomo Chemical Company, Limited. Process for the production of active anhydrous aluminum chloride. 3,764,664, Cl. 423-495.000.

Sudnishnikov, Boris Vasilevich; Kostylev, Alexander Dmitrievich; Curkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; Klimashko, Vladimir Vasilievich; and Plavskikh, Vladimir Dmitrievich. Reversible impact device for driving holes in eart. 3,763,939, Cl. 173-91.000.

Sudyk, John R., to Johnson Rubber Company, The. Seal for hatch cover or the like. 3,763,595, Cl. 49-485.000.

Sugawara, Hiroyuki: *See*—
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Sun Oil Company of Pennsylvania: *See*—
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Sun, Theresa I.: *See*—
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Van Thyne, Ray J.; and Rausch, John J., 3,764,404.

Suska, Charles R., to Stanley Works, The. Anti-friction bearing. 3,764,188, Cl. 308-187.000.

Sussman, Ernst. Control valve. 3,763,885, Cl. 137-556.600.

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Suzuki, Ikuo; and Kmai, Tomoyasu, to Toyoda Koki Kabushiki Kaisha. Rotating object breakage test apparatus. 3,763,698, Cl. 73-88.00r.

Suzuki, Kenji: *See*—
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Swain, Kenneth W., said Swain assor. to said Chase-Shawmut Company, The and said Klein assor. to said General Electric Company. Polyphase fuse with blown fuse indicator in each phase. 3,764,949, Cl. 337-244.000.

Swett, Leo Ralph; and Paris, Gerard Yvon, to Abbott Laboratories. 5[α-(p-substituted benzoyl)-p-substituted benzylamino]-1,3-dimethylpyrazoles. 3,764,610, Cl. 260-310.00r.

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SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH: *See*—
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Syner-Data, Inc.: *See—*
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Szego, Peter. Inflatable crib. 3,763,506, Cl. 5-93.000.
Tachibana, Kan-Ichi; and Nishioka, Michihiro, to Mitsubishi Mining & Cement Company, Ltd. Non-linear resistors. 3,764,951, Cl. 338-20.000.
Takahashi, Eiichi. Target apparatus including a plurality of mesh layers and sensors on each layer. 3,764,143, Cl. 273-122.00a.
Takahashi, Isao; Fujii, Motoharau; Kawakubo, Kazuo; Agriga, Masao; and Sugiura, Susumu, to Canon Kabushiki Kaisha. Developing device for use in electrophotographic copying machines. 3,764,208, Cl. 355-3.000.
Takahashi, Makoto; and Hashimoto, Takao, to Yashica Company. Level detection circuit. 3,765,006, Cl. 340-248.00a.
Takarazuka Control Cable Co., Inc.: *See—*
Kadoya, Teruichi; Kobayashi, Kunio; Kobayashi, Tetuo; and Koga, Yasuyuki, 3,764,779.
Takasago Perfumery Co., Ltd.: *See—*
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Takasugi, Kazuo, to Hitachi, Ltd. System for transmitting 1-bit information having priority level. 3,764,981, Cl. 340-147.01p.
Takasuna, Tsuneyoshi; Sugawara, Hiroyuki; and Kurosawa, Yukio, to Hitachi, Ltd. Vacuum circuit breaker. 3,764,764, Cl. 200-144.00b.
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Takenaka, Shigeo; and Iwamoto, Akira, to Nippon Kayaku Kabushiki Kaisha. Oxydehydrogenation process. 3,764,632, Cl. 260-680.00e.
Takeyama, Akihisa, to Nippon Gakki Seizo Kabushiki Kaisha. Voltage-controlled single tone selector for use in electronic musical instrument. 3,764,723, Cl. 84-1.010.
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Tanaka, Tetsuo; Kojima, Akio; and Enomoto, Takamichi, to Ricoh Co., Ltd. Electrophotographic composition of a poly-N-vinylcarbozole and a dimethyl-naphthalene. 3,764,314, Cl. 96-1.500.
Tang, Arthur Y. C., to General Diode Corporation. Microwave oven apparatus. 3,764,769, Cl. 219-10.550.
Taninecz, Demetro. Vehicle bumper. 3,764,174, Cl. 293-98.000.
Tanner, Robert L. Extended aperture log-periodic and quasi-log-periodic antennas and arrays. 3,765,022, Cl. 343-797.500.
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Tarjanyi, Michael; and Strier, Murray P., to Hooker Chemical Corporation. Decreasing cyanide content by an electrochemical technique. 3,764,497, Cl. 204-149.000.
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Tassie, Douglas Pray, to General Electric Company. High rate of flow port for spool valves. 3,763,739, Cl. 89-7.000.
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Tatter, Charles W.: *See—*
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Tauern, Dankmar, to Hilti Aktiengesellschaft. Capacitor discharge stud welding apparatus with compensated charging current. 3,764,778, Cl. 219-131.0wr.
Taylor, Abraham, to Westinghouse Electric Corporation. Sensitivity scintillation crystal and method therefor. 3,764,810, Cl. 250-473.000.
Taylor, Everett W.: *See—*
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Taylor, Frank E., to Syner-Data, Inc. Keyboard. 3,765,014, Cl. 340-365.000.
Taylor, George William: *See—*
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Taylor, Linnard: *See—*
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Taylor, Ronald C., to Airway Industries, Inc. Luggage case. 3,763,973, Cl. 190-49.000.
Taylor, William D., to Rubbermaid Sales Corporation. Foldable plate and cup rack. 3,763,790, Cl. 108-30.000.
te Velde, Ties Siebolt, to U.S. Philips Corporation. Method for making electrical monograin layer. 3,764,325, Cl. 96-38.400.
Teagno, Wladimiro; and Campari, Luigi. Strain relieved thin wire two part connector. 3,764,958, Cl. 339-105.000.
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Terry, Frank D.; House, Charles H.; and West, Virgil C., to Hewlett-Packard Company. Delay-interval selection for a digital delay generator. 3,764,783, Cl. 235-92.0ev.
Tesch, Guenter Horst, to Breveteam, S.A. Elastic fiber fleece material. 3,764,450, Cl. 161-109.000.
Tesoro, Giuliana C.; and Orszlan, Andrew, to Stevens, J. P., & Co., Inc. Thiosulfatoethyl sulfones. 3,764,619, Cl. 260-453.00r.
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Bodemuller, Robert, Jr., 3,764,517.
Hellmuth, Walter W.; and Schallenberg, Elmer E., 3,764,536.
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Thompson, Einar T. Automatic nailing apparatus. 3,764,053, Cl. 227-111.000.

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Thomson, Kenneth William, to Eastman Kodak Company. Single frame advance mechanism for movie projectors. 3,764,205, Cl. 352-169.000.

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Thring, Meredith Wooldrige; Cadorin, Dante; and Ducato, Aldo, to Montecatini Edison S.p.A. Process for producing pigment-quality titanium dioxide. 3,764,667, Cl. 423-613.000.

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Tien, Ping King: *See—*
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Tinklenberg, Meryl W.; Morawetz, Peter L.; and Olson, Roger, to Buckbee-Mears Company. Method of making memory planes. 3,764,486, Cl. 204-12.000.

Tipping, Roderick G., to General Motors Corporation. Hydromechanical transmission. 3,763,718, Cl. 74-687.000.

Titus, Hans-Joachim. Method and apparatus for pneumatically discharging a drum centrifuge. 3,763,572, Cl. 34-58.000.

Tleimat, Badawi W. Rotating disk still with a hydrodynamically applied thin film. 3,764,483, Cl. 202-236.000.

Toho Titanium Company Limited: *See—*
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Toma, Joseph R.; and Johnson, Oliver C., to Astrolab, Inc. Universal coaxial cable connector. 3,764,959, Cl. 339-177.00r.

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Trowbridge, Bruce D.; and Ness, Klaus J., to General Motors Corporation. Biocular magnifier. 3,764,194, Cl. 350-96.00b.

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Tschinkel, Johann G.; Giamei, Anthony; and Kearn, Bernard H., to United Aircraft Corporation. Apparatus for casting or directionally solidified articles. 3,763,926, Cl. 164-338.000.

Tse, Harold F.; and Seitzer, Walter H., to Sun Oil Company of Pennsylvania. Constant low oxygen concentration gas regeneration of refining catalysts. 3,764,558, Cl. 252-419.000.

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Tsuda, Yasuhisa, to Nissan Motor Company, Limited. Ventilating system for the passenger compartment of motor vehicle. 3,763,762, Cl. 98-2.180.

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Tyburski, Robert M.; Russell, Donald W.; Mayberry, Brian D.; and Kenney, Joseph R., to Optical Recognition Systems, Inc. Combined magnetic optical character reader. 3,764,978, Cl. 340-146.30d.

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Derr, Lloyd J. Electrostatically controlled heat shutter. 3,763,928, Cl. 165-32.000.
Teng, Robert N. Collapsible pistons. 3,763,740, Cl. 89-8.000.
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Watanabe, Kiyoshi; Yano, Hirohisa; Suzuki, Kenji; Mekata, Yoshimitsu; and Kawaharada, Hajime, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Mixed culture of yeasts on hydrocarbon. 3,764,474, Cl. 195-28.00r.
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LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 9TH DAY OF OCTOBER, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Berkebile, David Harris, and K. L. Knox, to E. I. du Pont de Nemours and Co. Forming polyethylene terephthalate. T915,001, 10–9–73, Cl. 264—89.

Brayton, Robert K., F. G. Gustavson, and G. D. Hachtel, to International Business Machines Corp. Method for effecting back substitution in sparse matrix techniques. T915,007, 10–9–73, Cl. 444—1.

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Deis, Daniel W., to Westinghouse Electric Corp. Method of fabrication and structure of a mechanically stable electrical winding having cooling openings therein. T915,004, 10–9–73, Cl. 310—52.

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Friedman, Paul A., to International Business Machines Corp. Coordinate-ordering for contour plotting. T915,006, 10–9–73. Cl. 444—1.

Garner, James S.: *See*—
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Granito, Gerry D., to International Business Machines Corp. Channel-memory bus control. T915,002, 10–9–73, Cl. 340—172.5.

Gustavson, Fred G., and G. D. Hachtel, to International Business Machines Corp. Method for effecting gauss elimination in sparse matrix techniques. T915,008, 10–9–73, Cl. 444—1.

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Norton, Henry T., to International Business Machines Corp. Computer program for interpreting symbolic language in a text stream. T915,003, 10–9–73, Cl. 444—1.

Thomas, Samuel C., Jr., and J. S. Garner, to Continental Oil Co. Process for preparing calcium hydroxide dispersions in oil-soluble calcium sulfonate solutions T915,005, 10–9–73. Cl. 252—33.4.

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LIST OF REISSUE PATENTEES

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Andrews, Raymond J., G. C. Fields, and H. K. Thompson, to American Telephone and Telegraph Co. Telephone reporting set. Re. 27,782, 10–9–73, Cl. 179—5.

Briand, Roger H., to Campagnie International Pour L. Informatique. Numerical data processing system. Re. 27,779, 10–9–73, Cl. 340—172.

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Garrett, William R., to Smith International, Inc. Reamer-stabilizer. Re. 27,781, 10–9–73, Cl. 175—339.

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Turner, Lyman H., to Xerox Corp. Roller assembly for belt-type photoreceptor in electrostatic printing machines. Re. 27,776, 10–9–73, Cl. 355—16.

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Chan, Wai Y. 228,576.

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Trunzo, Eugene R.: *See*—
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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2.1R 3,763,498
3R 3,763,494
8 3,763,495
46 3,763,496
81 3,763,497
227 3,763,499
243B 3,763,500

CLASS 4
67A 3,763,501
112 3,763,502
172.12 3,763,503
203 3,763,504
213 3,763,505

CLASS 5
93 3,763,506
100 3,763,507
131 3,763,508
341 3,763,509

CLASS 7
14.1R 3,763,510

CLASS 8
84 3,764,262
115.7 3,764,263
179 3,764,264

CLASS 9
1T 3,763,511
8R 3,763,512

CLASS 11
1A 3,763,513

CLASS 13
31 3,764,718

CLASS 14
71 3,763,514

CLASS 15
105 3,763,515
182 3,763,516
229R 3,763,517
250.17 3,763,518

CLASS 16
72 3,763,519

CLASS 19
65T 3,763,520
155 3,763,521

CLASS 23
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252R 3,764,266
253R 3,764,267
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254E 3,764,269
255E 3,764,270
258.5 3,764,271
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230AL 3,763,523
243K 3,763,524

CLASS 28
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1.4 3,763,526
1.6 3,763,527

CLASS 29
4.5 3,763,528
7.1 3,763,529
25.35 3,763,530
80R 3,763,531
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132 3,763,533
148.4B 3,763,534
149.5B 3,763,535
157.3B 3,763,536
182.7 3,764,275
190 3,764,276
191.6 3,764,277
193 3,764,278
194 3,764,279
195 3,764,280
200A 3,763,537
200B 3,763,538
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203B 3,763,540
212D 3,763,541
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406 3,763,543
407 3,763,544
408 3,763,546
430 3,763,547
445 3,763,548
470.1 3,763,545
470.3 3,763,549
578 3,763,550
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599 3,763,552
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CLASS 30
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CLASS 32
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CLASS 33
1LE 3,763,567
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CLASS 34
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58 3,763,572
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CLASS 35
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9D 3,763,574
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CLASS 36
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CLASS 37
61 3,763,580
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CLASS 38
205R 3,763,672

CLASS 40
104.18 3,763,582
124.1 3,763,583
125M 3,763,584
129C 3,763,585
130K 3,763,586

CLASS 42
1R 3,763,587

CLASS 43
4 3,763,588
25.2 3,763,589
43.11 3,763,590

CLASS 44
62 3,764,281
69 3,764,282

CLASS 46
145 3,763,591
152 3,763,592

CLASS 47
1.3 3,763,593

CLASS 49
126 3,763,594
485 3,763,595
496 3,763,596

CLASS 51
33R 3,763,597
52R 3,763,598
95GH 3,763,599
105SP 3,763,600
206.4 3,763,601
317 3,763,602
319 3,763,603
323 3,763,611
399 3,763,604

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80 3,763,608
105 3,763,609
160 3,763,610
309 3,763,612
3,763,614
447 3,763,613
507 3,763,615
635 3,763,616
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741 3,763,618

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25 3,763,622
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189 3,763,627
3,763,628
379 3,763,629
384 3,763,630

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CLASS 57
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CLASS 58
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CLASS 60
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53.68 3,763,655
53.74 3,763,656
85 3,763,657

CLASS 62
40 3,763,658
115 3,763,659
280 3,763,660
345 3,763,661
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CLASS 63
32 3,763,665

CLASS 64
4 3,763,664
23 3,763,666

CLASS 65
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CLASS 66
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178A 3,763,668

CLASS 68
5D 3,763,669
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CLASS 70
93 3,763,673
226 3,763,674
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CLASS 71
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67 3,764,291
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117 3,764,293
122 3,764,294

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14 3,763,679
43 3,763,680
46 3,763,682
57 3,763,681
77 3,763,683
148 3,763,684
217 3,763,685
364 3,763,686
392 3,763,687
402 3,763,688
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447 3,763,690

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71.5 3,763,694
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88R 3,763,697
3,763,698
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140 3,763,700
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359 3,763,704
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242.1A 3,763,715
604 3,763,716
679 3,763,717
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CLASS 82
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CLASS 92
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CLASS 93
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51R 3,763,749
53BF 3,763,750

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11.5 3,763,752
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19 3,763,754
31EL 3,763,755
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1.2 3,764,312
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1.6 3,764,316
1.7 3,764,317
2 3,764,318
3 3,764,319
29D 3,764,320
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33 3,764,323
35.1 3,764,324
38.4 3,764,325
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55 3,764,327
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3,764,329
69 3,764,330
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76C 3,764,332
88 3,764,333
90R 3,764,334
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80PS 3,764,343
85 3,764,344
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140R 3,764,349
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144 3,764,347
176 3,764,350
3,764,351
207 3,764,716
353 3,763,764
450.7 3,763,765
468 3,763,766
476 3,763,767
483 3,763,768

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39 3,763,770
100 3,763,771
218 3,763,772
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41 3,763,774
126 3,763,776
233 3,763,775
269 3,763,777
426 3,763,778
473 3,763,779

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19.2 3,763,780
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28EB 3,763,782
28M 3,763,783
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76R 3,763,785
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130 3,763,788

CLASS 105
215C 3,763,789

CLASS 106
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2 3,764,353
54 3,764,354
57 3,764,355
74 3,764,356
90 3,764,357
249 3,764,358
280 3,764,359
288Q 3,764,360
3,764,361
300 3,764,362

CLASS 108
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51 3,763,791
3,763,792
64 3,763,793
3,763,794

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CLASS 110
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CLASS 112
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CLASS 114
.5D 3,763,809
.5F 3,763,808
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66.5 3,763,810
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145A 3,763,812

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CLASS 115

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CLASS 116

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234 3,764,381
238 3,764,382

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258 3,763,823

CLASS 119

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51.12 3,763,825
52R 3,763,826
82 3,763,827
158 3,763,828
159 3,763,829

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165 3,763,831

CLASS 123

25C 3,763,832
32EA 3,763,833
32SP 3,763,834
41.15 3,763,836
44.11 3,763,835
119F 3,763,837
122AA 3,763,838
136 3,763,839
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146.5A 3,763,841
179S 3,763,842

CLASS 124

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CLASS 125

11PH 3,763,844
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CLASS 126

41R 3,763,846
92B 3,763,847
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132D 3,763,857
156 3,763,858
173H 3,763,859
271 3,763,861
276 3,763,862
287 3,763,863
305 3,763,864
334 3,763,860
465 3,763,865
558 3,763,866

CLASS 130

6 3,763,867
27M 3,763,868

CLASS 131

325.18 3,763,891

CLASS 132

84B 3,763,869
85 3,763,870

CLASS 133

3R 3,763,871

CLASS 134

6 3,764,383
12 3,764,384

CLASS 135

47 3,763,872

CLASS 136

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361DM 3,763,912
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566 3,763,887
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170 3,763,895

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CLASS 140

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112 3,764,407
171 3,764,408
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CLASS 151

14R 3,763,909

CLASS 152

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209 3,763,911
361R 3,763,913

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78 3,764,428
89 3,764,429
150 3,764,430
156 3,764,431
242 3,764,432
245 3,764,433
251 3,764,434
257 3,764,435
288 3,764,436
306 3,764,437
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CLASS 159

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CLASS 160

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354 3,763,917
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CLASS 161

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109 3,764,450
124 3,764,451
140 3,764,452
147 3,764,453
159 3,764,454
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171 3,764,456
183 3,764,457
190 3,764,458
225 3,764,459

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65 3,764,464
351 3,764,465

CLASS 163

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CLASS 164

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279 3,763,922
282 3,763,923
283 3,763,924
338 3,763,926
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32 3,763,928
55 3,763,929
154 3,763,930

CLASS 166

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72 3,763,932
294 3,763,934
315 3,763,935

CLASS 169

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CLASS 172

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CLASS 173

40 3,764,468
91 3,763,939

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15BH 3,764,726
15C 3,764,724
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34 3,764,727
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138D 3,764,729
151 3,764,730

CLASS 175

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5.4R 3,764,732
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170 3,763,941
339 Re.27,781
354 3,763,942

CLASS 176

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19R 3,764,467
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78 3,764,471

CLASS 177

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5.4CD 3,764,739
5.4SY 3,764,733
5.4M 3,764,735
7.2 3,764,737
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7.6 3,764,741
7.8 3,764,740
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81R 3,764,752
84VF 3,764,753
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100.2CA 3,764,754
100.2C 3,764,756
100.2P 3,764,758
100.2S 3,764,755
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6.66 3,763,945
9.62 3,763,946
44R 3,763,947
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51 3,763,949
64A 3,763,950
65R 3,763,952
68R 3,763,953
79.2R 3,763,951
98 3,763,954
3,763,955
104 3,763,956
119 3,763,957

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181 3,763,958

CLASS 184

6.12 3,763,959
6.13 3,763,960
11A 3,763,961
15A 3,763,962

CLASS 186

1R 3,763,963

CLASS 187

2 3,763,964
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CLASS 188

5 3,763,966
62 3,763,967
171 3,763,968
184 3,763,969
282 3,763,970
322 3,763,971

CLASS 190

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49 3,763,973

CLASS 192

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3R 3,763,974
3.63 3,763,976
4A 3,763,978
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89A 3,763,979

CLASS 193

35R 3,763,980
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10 3,763,983
92 3,763,984

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28R 3,764,473
3,764,474
33R 3,764,475
49 3,764,476
63 3,764,477
99 3,764,478
103.5R 3,764,479
3,764,480
109 3,764,481

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20 3,763,985
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151 3,763,988
181.2 3,763,989

CLASS 198

33AD 3,763,990
85 3,763,991
127R 3,763,992
203 3,763,993

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76 3,764,761
83SA 3,764,763
144B 3,764,764
166K 3,764,765
175 3,764,766

CLASS 201

40 3,764,482

CLASS 202

236 3,764,483

CLASS 203

1R 3,763,994
65E 3,764,001

CLASS 204

1T 3,764,484
11 3,764,485
12 3,764,486
15 3,764,487
38B 3,764,488
43G 3,764,489
52R 3,764,490
56R 3,764,491
59R 3,764,492
64R 3,764,493
74 3,764,494
99 3,764,495
3,764,496
149 3,764,497
3,764,498
151 3,764,499
152 3,764,500
159.15 3,764,501
159.22 3,764,502
180P 3,764,503
181 3,764,505
192 3,764,507
195B 3,764,508
195P 3,764,504
195R 3,764,506
243R 3,764,509
284 3,764,510
298 3,764,511
299 3,764,512
3,764,513
3,764,514

CLASS 205

111 3,764,519

CLASS 206

.83 3,764,003
29 3,763,995
45.14 3,764,004
45.34 3,763,997
47R 3,763,998
50 3,763,999
65R 3,764,000
71.4 3,763,996
80A 3,764,002

CLASS 208

10 3,764,515
27 3,764,516
33 3,764,517
80 3,764,518
111 3,764,520
143 3,764,521
321 3,764,522

CLASS 209

211 3,764,005
3,764,006
3,764,007

CLASS 210

5 3,764,523
3,764,524
15 3,764,525
23 3,764,526
30 3,764,527
50 3,764,528
73 3,764,008
96 3,764,009
149 3,764,010
192 3,764,011
195 3,764,012
205 3,764,013
220 3,764,014
242 3,764,015
400 3,764,016
481 3,764,017
500 3,764,018

CLASS 211

49R 3,764,019

CLASS 212

7 3,764,020
35 3,764,021

CLASS 214

1BC 3,764,023
1BD 3,764,022
6DS 3,764,024
7 3,764,025
35R 3,764,026
37 3,764,027
38CC 3,764,028
41 3,764,029
77P 3,764,030
506 3,764,031
621 3,764,032

CLASS 215

9 3,764,033

CLASS 217

131WR 3,764,778

CLASS 219

10.49 3,764,767
10.55 3,764,768
3,764,769
3,764,770
62 3,764,774
69V 3,764,771
85 3,764,772
121LM 3,764,776
121L 3,764,775
125R 3,764,777
201 3,764,779
430 3,764,780

CLASS 220

4E 3,764,034
15 3,764,035
3,764,036
46P 3,764,037
48 3,764,038
55A 3,764,039

CLASS 221

76 3,764,040

CLASS 222

1 3,764,041
3,764,042
55 3,764,043
70 3,764,044
146HE 3,764,045
193 3,764,046
548 3,764,047

CLASS 224

42.41 3,764,048

CLASS 225

3 3,764,049

CLASS 226

25 3,764,050
152 3,764,051
176 3,764,052

CLASS 227

111 3,764,053
114 3,764,054

CLASS 228

3 3,764,055
4 3,764,056

CLASS 229

2.5 3,764,057
17R 3,764,058
23R 3,764,059
65 3,764,060
70 3,764,061

CLASS 230

293.54 3,764,606

CLASS 233

7 3,764,062

CLASS 235

61E 3,764,063
70D 3,764,064
88 3,764,065
92EV 3,764,783
92PE 3,764,781
92TC 3,764,782
150.21 3,764,785
150.3 3,764,784
151.1 3,764,789
151.11 3,764,786
152 3,764,787
3,764,790
153A 3,764,788
156 3,764,791
168 3,764,792

CLASS 238

84 3,764,066

CLASS 239

1 3,764,067
3 3,764,068
8 3,764,069
93 3,764,070
132.5 3,764,071
230 3,764,073
286 3,764,072
318 3,764,074
394 3,764,075
533 3,764,076
674 3,764,077

CLASS 240

2PA 3,764,793
2R 3,764,794
3,764,795
2.25 3,764,796
7.1 3,764,797
22 3,764,798
24 3,764,799
106R 3,764,800
108A 3,764,801

CLASS 241
40 3,764,078
110 3,764,079
186R 3,764,080
199.7 3,764,081

CLASS 242
4B 3,764,082
43.1 3,764,090
46.21 3,764,083
55.19A 3,764,084
56.6 3,764,085
130 3,764,086
186 3,764,087
195 3,764,088
198 3,764,089

CLASS 244
3.22 3,764,091
42CD 3,764,092
46 3,764,093
50 3,764,094
77M 3,764,095
110B 3,764,096
145 3,764,097

CLASS 246
468 3,764,802

CLASS 248
2 3,764,098
214 3,764,099
358R 3,764,100

CLASS 249
160 3,764,101

CLASS 250
211J Re.27,775
213A 3,764,812
221 3,764,813
252 3,764,805
299 3,764,803
302 3,764,811
324 3,764,804
330 3,764,807
469 3,764,809
473 3,764,810
490 3,764,808
491 3,764,806

CLASS 251
96 3,764,102
292 3,764,103
357 3,764,104

CLASS 252
1 3,764,529
8.5C 3,764,530
8.8 3,764,531
12 3,764,532
33 3,764,533
42.7 3,764,534
48.2 3,764,535
49.7 3,764,536
56R 3,764,537
62.1 3,764,538
62.54 3,764,539
62.55 3,764,540
89 3,764,541
99 3,764,559
135 3,764,542
151 3,764,543
170 3,764,544
171 3,764,545
182 3,764,546
184 3,764,547
188 3,764,548
300 3,764,549
301.1R 3,764,550
3,764,551
3,764,553
301.1W 3,764,552
301.4S 3,764,554
301.6P 3,764,555
408 3,764,556
415 3,764,557
419 3,764,558
426 3,764,560
447 3,764,561
455R 3,764,562
455Z 3,764,563
465 3,764,564
470 3,764,565
518 3,764,566
522 3,764,567
526 3,764,568
554 3,764,569

CLASS 254
2R 3,764,105
8R 3,764,106
10.5 3,764,107
28 3,764,108
86R 3,764,109
105 3,764,110
187R 3,764,111

CLASS 259
6 3,764,114
24 3,764,115
57 3,764,112
72 3,764,116
107 3,764,117
185 3,764,113
192 3,764,118

CLASS 260
2.5AR 3,764,570
23XA 3,764,571
3,764,572
30.4R 3,764,573
30.6SB 3,764,574
37R 3,764,575
40R 3,764,576
45.7P 3,764,577
45.7 3,764,578
45.75K 3,764,579
45.8N 3,764,580
47EC 3,764,582
47R 3,764,581
49 3,764,583
72N 3,764,585
78.4EP 3,764,584
78.4R 3,764,586
80.7 3,764,588
80.71 3,764,589
80.8 3,764,587
85.5R 3,764,590
88.2R 3,764,591
94.2R 3,764,592
97.5 3,764,593
210E 3,764,595
211.5R 3,764,594
239.55 3,764,596
244R 3,764,597
246B 3,764,598
247.2R 3,764,599
251QB 3,764,600
251A 3,764,601
268DK 3,764,602
287R 3,764,603
293.53 3,764,604
293.54 3,764,605
293.68 3,764,607
294.8E 3,764,608
309 3,764,609
310R 3,764,610
326.5SF 3,764,611
328 3,764,612
340.5 3,764,613
343.2F 3,764,614
397.4 3,764,615
397.45 3,764,616
410.7 3,764,617
448R 3,764,618
453R 3,764,619
501.2 3,764,620
514R 3,764,621
566A 3,764,622
573 3,764,623
574 3,764,624
577 3,764,625
583R 3,764,626
593P 3,764,627
610R 3,764,628
621R 3,764,629
3,764,630
668F 3,764,631
680E 3,764,632
683D 3,764,635
683R 3,764,634
683.15R 3,764,636
683.2 3,764,633
683.47 3,764,637
876R 3,764,638
880B 3,764,639
978 3,764,640

CLASS 261
23A 3,764,119
39B 3,764,120
111 3,764,121

CLASS 264
45 3,764,641
47 3,764,642
65 3,764,643
89 3,764,644
112 3,764,645
162 3,764,646
242 3,764,647
256 3,764,648

CLASS 266
23H 3,764,122
29 3,764,123
34V 3,764,124
39 3,764,125

CLASS 269
60 3,764,126
287 3,764,127

CLASS 271
51 3,764,128
103 3,764,133
156 3,764,129

CLASS 272
66 3,764,130
67 3,764,131
79R 3,764,132

CLASS 273
1R 3,764,134
3,764,135
38 3,764,136
80B 3,764,137
85R 3,764,138
88 3,764,139
95A 3,764,140
95R 3,764,141
101 3,764,142
122A 3,764,143
126A 3,764,144
131AD 3,764,145
137AB 3,764,146

CLASS 274
4B 3,764,147

CLASS 277
9 3,764,149
40 3,764,148
90 3,764,150
207A 3,764,151

CLASS 279
16 3,764,152
86 3,764,153

CLASS 280
11.35K 3,764,154
11.35Y 3,764,155
47.37 3,764,156
124B 3,764,157
124R 3,764,158
150AB 3,764,160
150SB 3,764,161
150B 3,764,159
150.5 3,764,162
292 3,764,163
415B 3,764,164
419 3,764,165
425 3,764,166

CLASS 281
15B 3,764,167

CLASS 285
52 3,764,169
302 3,764,168
412 3,764,170

CLASS 290
40 3,764,814
52 3,764,815

CLASS 292
8 3,764,171
15 3,764,172
346 3,764,173

CLASS 293
98 3,764,174

CLASS 294
19R 3,764,175
86.25 3,764,176

CLASS 296
43 3,764,177
84R 3,764,178
137R 3,764,179

CLASS 297
400 3,764,180

CLASS 303
21EB 3,764,182
54 3,764,183

CLASS 305
25 3,764,184
47 3,764,185

CLASS 307
10LS 3,764,816
10R 3,764,817
116 3,764,819
121 3,764,820
139 3,764,821
141 3,764,822
205 3,764,823
221C 3,764,824
235R 3,764,826
238 3,764,825
241 3,764,827
245 3,764,828
255 3,764,829
260 3,764,830
271 3,764,831
293 3,764,832
296A 3,764,833
296 3,764,818

CLASS 308
9 3,764,186
72 Re.27,778
160 3,764,187
187 3,764,188
237 3,764,189

CLASS 310
17 3,764,834
52 3,764,835
98 3,764,836
168 3,764,837

CLASS 312
286 3,764,190

CLASS 313
63 3,764,838
73 3,764,839
109 3,764,840
153 3,764,841
177 3,764,842
184 3,764,843
220 3,764,844
272 3,764,845

CLASS 315
27TD 3,764,846
52 3,764,847
55 3,764,848
241P 3,764,849
538 3,764,850

CLASS 317
11C 3,764,851
13A 3,764,852
18D 3,764,853
18R 3,764,855
68 3,764,854
100 3,764,856
101DH 3,764,857
107 3,764,858
134 3,764,859
146 3,764,860
3,764,861
234R 3,764,862
3,764,863
235R 3,764,864
3,764,865
262A 3,764,866

CLASS 318
52 3,764,867
85 3,764,868
138 3,764,869
139 3,764,870
207R 3,764,871
227 3,764,872
252 3,764,873
266 3,764,874
3,764,875
326 3,764,876
578 3,764,877
632 3,764,878

CLASS 320
48 3,764,879

CLASS 321
2 3,764,880
3,764,881
5 3,764,882
9A 3,764,884
11 3,764,883
13 3,764,885
15 3,764,886
45R 3,764,887

CLASS 322
20 3,764,888

CLASS 323
17 3,764,889
24 3,764,890
43.5R 3,764,891

CLASS 324
.5R 3,764,892
29.5 3,764,893
32 3,764,894
34FL 3,764,895
34L 3,764,896
40 3,764,897
51 3,764,898
61R 3,764,899
71CP 3,764,901
71R 3,764,900
83D 3,764,903
83R 3,764,902
86 3,764,904
102 3,764,905
111 3,764,906
141 3,764,907
142 3,764,908
146 3,764,910
156 3,764,909
186 3,764,911

CLASS 325
22 3,764,912
30 3,764,913
42 3,764,914
53 3,764,915
418 3,764,916
423 3,764,917

CLASS 328
37 3,764,918
91 3,764,919
110 3,764,920
151 3,764,921
162 3,764,922
175 3,764,923

CLASS 329
50 3,764,924
3,764,925
104 3,764,926
3,764,927

CLASS 330
5.5 3,764,928
15 3,764,929
16 3,764,930
29 3,764,931
30R 3,764,932

CLASS 331
1A 3,764,933
94.5 3,764,934
3,764,935
3,764,936
3,764,937
96 3,764,938

CLASS 333
7 3,764,939
8 3,764,940
10 3,764,941
33 3,764,942
79 3,764,943

CLASS 334
7 Re.27,777

CLASS 335
2 3,764,944
187 3,764,945
195 3,764,946

CLASS 336
136 3,764,947

CLASS 337
163 3,764,948
244 3,764,949

CLASS 338
2 3,764,950
20 3,764,951
32R 3,764,952
154 3,764,953

CLASS 339
65 3,764,954
3,764,955
74R 3,764,956
92M 3,764,957
105 3,764,958
177R 3,764,959
217S 3,764,960
238 3,764,961

CLASS 340
3R 3,764,962
3,764,963
6R 3,764,964
12 3,764,965
14 3,764,966
15.5SS 3,764,967
18NC 3,764,968
3,764,969
3,764,970
27NA 3,765,010
29 3,764,971
35 3,764,972
40 3,764,973
52F 3,764,974
62 3,764,975
87 3,764,976
146.3ED 3,764,980
146.3D 3,764,978
146.3P 3,764,979
147LP 3,764,981
147R 3,764,977
3,764,982
150 3,764,983
168S 3,764,984
171R 3,764,985
172.5 Re.27,779
3,764,986
3,764,987
3,764,988
3,764,989
3,764,990
3,764,991
3,764,992
3,764,993
3,764,994
3,764,995
3,764,996
3,764,997
3,764,998
3,764,999
173CA 3,765,000
3,765,002
3,765,003
173R 3,765,001
174TF 3,765,004
174.1G 3,765,005
248A 3,765,006
280 3,765,007
3,765,008
324A 3,765,009
324M 3,765,011
347DD 3,765,013
347NT 3,765,012
365E 3,765,015
365 3,765,014
408R 3,765,016

CLASS 343
5LS 3,765,019
5SC 3,765,018
5SM 3,765,020
7.7 3,765,017
785 3,765,021
792.5 3,765,022
797 3,765,023
854 3,765,024

CLASS 346
7 3,765,025
74ES 3,765,026
3,765,027

CLASS 350
6 3,764,191
7 3,764,192
37 3,764,193
96WG 3,764,195
96B 3,764,194
161 3,764,196
3,764,197
190 3,764,198
272 3,764,199
285 3,764,200
303 3,764,201

CLASS 352
123 3,764,202
124 3,764,203
169 3,764,205

CLASS 353
21 3,764,206

CLASS 355
3 3,764,207
3,764,208
16 Re.27,776
18 3,764,209
69 3,764,210
71 3,764,211
100 3,764,212

CLASS 356
5 3,764,213
36 3,764,215
100 3,764,216
106 3,764,217
118 3,764,218
138 3,764,219
153 3,764,220
201 3,764,214

CLASS 401
129 3,764,221
261 3,764,222

CLASS 404
73 3,764,223

CLASS 408
75 3,764,204
231 3,764,224

CLASS 415
193 3,764,225
219R 3,764,226

CLASS 416
39 3,764,227
93 3,764,228
114 3,764,229
134 3,764,230
186 3,764,231
322 3,764,712

CLASS 417
118 3,764,235
319 3,764,232
372 3,764,236
414 3,764,233
424 3,764,237

CLASS 418
15 3,764,238
61 3,764,239
84 3,764,234
120 3,764,240
138 3,764,241

CLASS 423
38 3,764,650
63 3,764,274
86 3,764,651
89 3,764,652
242 3,764,653
3,764,654
309 3,764,655
311 3,764,656
321 3,764,657
3,764,658
362 3,764,660
367 3,764,659
416 3,764,661
447 3,764,662
495 3,764,664
574 3,764,565
645 3,764,666

CLASS 424
44 3,764,668
80 3,764,669
118 3,764,670

122	3,764,671	270	3,764,685	303	3,764,698	78	3,764,244	CLASS 426		CLASS 431	
181	3,764,672	272	3,764,682	304	3,764,697	131	3,764,245	46	3,764,708	81	3,764,181
184	3,764,673	273	3,764,686	305	3,764,699			56	3,764,649	89	3,764,254
200	3,764,674		3,764,687	315	3,764,700	135	3,764,246	68	3,764,709	236	3,764,255
210	3,764,676		3,764,690	317	3,764,701	224	3,764,247	188	3,764,710	255	3,764,256
211	3,764,677	274	3,764,688		3,764,702	251	3,764,248	201	3,764,711	CLASS 432	
245	3,764,678	275	3,764,689	319	3,764,703			233	3,764,713	19	3,764,257
250	3,764,679		3,764,691	324	3,764,704	311	3,764,249	234	3,764,714	107	3,764,258
254	3,764,680	279	3,764,692	342	3,764,705	326	3,764,250	273	3,764,715	180	3,764,259
258	3,764,681	281	3,764,693		3,764,706		3,764,251	310	3,764,348	217	3,764,260
263	3,764,683	285	3,764,694	361	3,764,707	383	3,764,252	478	3,764,663	258	3,764,261
	3,764,684	300	3,764,695	CLASS 435		427	3,764,242	481	3,764,717	CLASS 444	
267	3,764,675	301	3,764,696	3	3,764,243	466	3,764,253	613	3,764,667	1	3,765,028

CLASSIFICATION OF DESIGNS

D02—	276	228,531		91	228,540			228,550	D34—	2	228,559			228,567	D54—	14	228,575
D04—	4	228,532		176	228,541		27	228,551		5	228,560	D45—	10	228,568	D56—	4	228,576
		228,533	D07—	76	228,542			228,552			228,561	D48—	16	228,569	D61—	1	228,577
	24	228,534	D08—	99	228,545		29	228,553			228,562		20	228,570			228,578
D06—	15	228,535		107	228,546	D23—	43	228,554			228,563		24	228,571	D74—		228,579
	30	228,536	D09—	187	228,543	D26—	14	228,555			228,564	D49—	12	228,572	D86—	10	228,544
	79	228,537		258	228,547	D29—	11	228,556	D42—	7	228,565	D52—	6	228,573	D87—	1	228,580
	85	228,538		284	228,548	D30—	1	228,557			228,566			228,574	D92—	4	228,581
		228,539	D22—	26	228,549		99	228,558									

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46 : 3,764,031

47 : 3,763,612	3,763,932	3,764,627	3,763,702	3,763,607	3,763,609
3,763,898	3,763,933	3,764,854	3,763,758	3,763,629	3,763,733
3,764,174	3,763,935	3,764,875	3,763,766	3,763,663	3,763,857
3,764,374	3,763,940	3,764,892	3,763,775	3,763,818	3,763,930
3,764,552	3,763,963	3,764,932	3,763,836	3,763,872	3,763,947
48 : Re.27,781	3,763,966	3,764,968	3,764,059	3,763,931	3,763,952
3,763,539	3,764,056	3,764,969	3,764,097	3,764,419	3,763,978
3,763,557	3,764,065	3,764,970	3,764,217	3,764,461	3,764,111
3,763,565	3,764,146	3,765,028	3,764,219	3,764,462	3,764,185
3,763,608	3,764,149	49 : 3,763,848	3,764,375	3,764,641	3,764,194
3,763,610	3,764,168	50 : 3,763,739	3,764,441	3,764,673	3,764,240
3,763,633	3,764,173	3,764,823	3,764,449	54 : 3,764,153	3,764,425
3,763,706	3,764,254	3,764,906	3,764,790	3,764,421	3,764,426
3,763,712	3,764,373	51 : 3,763,525	3,764,939	55 : 3,763,522	3,764,451
3,763,773	3,764,383	3,763,568	3,764,976	3,763,536	3,764,603
3,763,802	3,764,517	3,763,644	3,764,978	3,763,567	3,764,868
3,763,893	3,764,521	3,763,678	3,765,013	3,763,575	3,765,016
3,763,908	3,764,622	3,763,691	53 : 3,763,516	3,763,591	

DESIGN PATENTS

5 : 228,552	228,556	18 : 228,572	228,578	228,558	41 : 228,577
6 : 228,537	9 : 228,544	22 : 228,566	228,579	228,560	42 : 228,564
228,540	228,580	25 : 228,534	34 : 228,543	228,561	44 : 228,542
228,554	12 : 228,538	26 : 228,551	228,562	228,569	228,568
228,555	228,541	228,557	36 : 228,539	228,570	48 : 228,532
228,559	13 : 228,581	27 : 228,549	228,545	228,575	228,533
228,563	17 : 228,565	228,550	228,548	39 : 228,553	53 : 228,546
8 : 228,531	228,571				

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

8 : T915,003	36 : T915,002	T915,008	39 : T915,001	42 : T915,004	T915,005
34 : T915,006	T915,007				

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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*